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ABSTRACT

A project provided ongoing opportunities for teachers in Iowa to upgrade their expertise in agribusiness management using new technology; production, processing, and marketing agricultural products; biotechnology in agriculture; and conservation of natural resources. The project also modeled effective teaching methods and strategies. Project activities included the following: (1) an inservice program on agricultural marketing and futures held at five locations, featuring a presentation, a teleconference, and distribution of new teaching materials; (2) a program on integrated pest management at a university in cooperation with the extension service; (3) computer seminars on the use of agricultural information and networking services in teaching financial management at five locations; (4) a 2-day fruit, vegetable, and sod program; and (5) individualized assistance provided by telephone and in person. A total of 254 persons attended the sessions. All programs were rated highly by participants. (The following materials that were developed and distributed are included in this project report: an exercise on using grain futures, a marketing plan simulation, a marketing quiz, sets of transparency masters on marketing and futures and on common Midwestern corn diseases, lesson plans and transparency masters for chemical application strategies and disease control, and lesson plans for cutworm scouting.) (KC)

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IA87PD07

I. Final Report

A. Activity Title: Technical Update for Vocational Agriculture Teachers in Secondary Schools.

Activity FCS Number: 87-04-01

Submitting Institution: Iowa State University

FY: 1987

Department of Agricultural Education, Iowa State University

Duration: A continuous activity to update personnel

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B. Objectives of the Project

1. To provide on-going opportunities for teachers to upgrade vocational-technical expertise in the following areas:

   a. Agribusiness management utilizing new technology

   b. Production, processing and marketing agricultural products

   c. Biotechnology in agriculture

   d. Conservation of natural resources

2. To provide personnel development inservices in new and emerging occupational areas resulting from changes in the economy brought about by technological and social change.

3. To utilize agribusiness, industry and other community agencies as training resources.

4. To model effective teaching methods and strategies that teachers may emulate in their local situations.

C. Procedures Utilized in Implementing the Project

An inservice program on Agricultural Marketing and Futures was held the evening of October 30, 1986, at five locations: Ames, Waterloo, Ottumwa, Creston and Estherville. The program included a presentation and teleconference on agricultural economics which was televised over satellite TV from Ames to the four community college sites. At each site, faculty members from the Agricultural Education Department at Iowa State University coordinated the sessions which included presentations by commodity brokers and agricultural instructors. Each participant received new teaching materials on marketing and futures.

CE060224

A program on Integrated Pest Management was held on the Iowa State University campus the evening of April 24, 1986, in cooperation with IPM Extension. Sessions included weed and insect identification and control and an introduction to water quality. Each participant received a comprehensive set of Extension publications related to managing insects, weeds and diseases in corn and soybeans.

Computer seminars on the use of agricultural information and networking services in teaching financial management were held during Spring, 1987, at five locations. For more details, consult Activity FCS Number: 87-04-14

A two day fruit/vegetable and sod program was held June 17 and 18, 1987, in conjunction with Extension agriculturists and the Sod Field Day. The program included information on control of diseases, budgeting plans for fruit/vegetable enterprises, new cultivars and approved practices.

Individualized assistance was provided as needed to agriculture instructors over the telephone and in person at meetings and conferences.

D. Procedures Utilized in Evaluating the Project

The marketing and integrated pest management programs were individually evaluated at the close of each session. Participants evaluated content and method on a five point scale on forms which included space for comments and suggestions for future programs.

E. Evaluation Findings

All project objectives were accomplished as follows:

Inservices were provided in topic areas listed in objective #1. The fruit, vegetable and sod inservice featured alternative agriculture enterprises, an emerging occupational area (Objective #2). The commodity brokers in the marketing inservice and the Extension input into all programs were examples of outside training resources (Objective #3). All inservice programs modeled effective teaching methods; the marketing inservice featured outstanding teachers who shared their teaching strategies (Objective #4).

All inservice programs received positive evaluations. Comments were highly favorable. On a five-point scale, ratings ranged from 3.5 to 4.1. (See attachments for specific results).

F. Audience Served

Agriculture Marketing and Futures - 101 people attended, 84 were agriculture teachers (77 males, 7 females) and 17 were resource people.

Integrated Pest Management - 51 attended, 42 were agriculture teachers (40 males, 2 females). There were 3 guests and 6 resource people.

Fruit/Vegetable/Sod - 102 attended the first day, over 500 the second day (Sod Field Day), 31 were agriculture teachers (29 male, 2 female). Remainder were from the Cooperative Extension Service and agribusiness.

G. Success Stories

About half of the agriculture teachers attended at least one of the inservice programs. There were 25 teachers who registered for a follow-up workshop in which they will share classroom activities they have developed as a result of inservice programs.

H. Special Activities

See item C

I. Education Equity

Registration forms for inservice activities were mailed to all secondary and post-secondary agriculture instructors. Attendance figures reflect an attendance by females equal to or exceeding the proportion of women who are agriculture instructors (four percent).

An inservice committee composed of agriculture instructors and project director met twice during the year to discuss topics and implementation procedures. The committee gave advice on times and locations which would be accessible and convenient for all. Programs were planned keeping in mind different levels of experience and technical training. A specific needs assessment was done for the Integrated Pest Management program.

J. Recommendations

Technical update of agriculture instructors needs to be an on going concern. It is essential that teachers be continually updated, due to a changing agriculture, development of new knowledge and new methods of facilitating learning.

K. Financial Summary

Financial materials will be provided by the Accounting Office at Iowa State University.

II. Abstracts

See attached

III. Products

Attached are copies of the following materials which were developed and distributed under the technical update grant. In addition, other products from other sources were used as resource material.

A. Agricultural Marketing and Futures

1. The Three M's - a marketing plan simulation.

2. A set of transparency masters on marketing and futures.

B. Integrated Pest Management

1. A set of transparency masters on common Midwestern corn diseases.

2. Lesson plans and transparency masters for chemical application strategies and disease control.

3. Lesson plans and transparency masters for cutworm scouting.

Marketing Inservice Meeting
October 30, 1986

An inservice on marketing for vo-ag and tech-ag instructors was held on Thursday evening, October 30, at 5 locations around the state. The purpose of this meeting was to update technical expertise regarding marketing of agricultural products as well as to provide teaching materials for marketing plans, futures markets and the mechanics of buying and selling futures contracts. The meeting utilized a fairly new concept in inservice programs as a portion of the program was televised by using the uplink system available from WOI television in Ames to four other locations - Estherville, Waterloo, Creston, and Ottumwa.

The program consisted of presentations by vocational agriculture instructors on the use of new materials, an introduction on the futures market by Dr. Ron Deiter, Iowa State University, Agricultural Economics Department and a discussion of the mechanics of buying and selling of futures contracts by local brokers. Faculty members from the Department of Agricultural Education, Iowa State University conducted the program at each site. Materials included a student self-study book, marketing problems and transparencies.

Evaluation of the meeting was as follows (Scale of 1 to 5 with 5 being high):

1.	Program was interesting.	3.99
2.	I gained ideas of value to me in my work.	3.94
3.	My technical knowledge in the area of marketing was increased.	3.52
4.	My technical knowledge in the area of futures was increased.	3.51
5.	I received helpful instructional materials.	4.17
6.	I liked the satellite - TV method of conducting workshops.	3.80

Attendance at the meeting consisted of 84 vocational agriculture instructors from both secondary and post-secondary institutions and 17 resource people for a total of 101 individuals.

A summary of the comments from the evaluation sheets are as follows:

1. The topic was important and more information on marketing needs to be available. It was also a topic that needed more time as the time alloted was not sufficient. More information about options was needed and would have been helpful.

2. The level of instruction was too basic. Suggest an assessment of the level of knowledge of the individuals involved to help the resource people as well as making the information new to the individuals. Good mix of industry, ISU, and teachers. The presentation by the brokers was very good and a good component of the meeting.

3. Comments on the satellite method of presentation ranged from very favorable to very unfavorable. The unfavorable comments dealt not with the presentation but with the mechanics of the presentation caused by such things as the lighting or camera. The favorable dealt with the prospect of more and cheaper meetings by using this method. Videotapes of the presentation should have been done and they would be very useful in the presentation of this material. More satellite time was needed. An interesting observation was that the individuals in the studio rated this method higher than at the other location sites.

4. The teaching materials presented look very usable and very good. We need more teaching materials on this subject.

COMMENTS

Ames

The broker was a bit dry in his presentation.
Teaching materials for options needed, todays material look great.
Was very interesting and should be helpful. The instructional materials look very good.
This was the best inservice I believe I have ever attended.
Ready for more teaching materials, these look real good.
My knowledge of the topic was/is limited! I would have like to been able to read the materials first so I had a better knowledge of the speakers comments. Might choose to do this in the future.
I'd like to see more sample problems developed, especially in hedging and options. Material looks very useable. Software simulating the price and basis changes would be useful.
Excellent materials! I appreciate it.
This is a good method to get material out to use in the field. We need more information in this area, examples of problems we could use in class. Answer keys are a must.
Good supplement to previous learning at ISU. Good inservice.

Creston

I didn't like the satellite-TV method of material presentation - level of material was too low.
Innovative idea - we should be able to have more updates and much quicker/cheaper with this technique - very good.
May want to survey level of knowledge on a subject to hit the level we are at and help the resource person prepare.

Estherville

Central locations hard to find - distance a problem.
Would like to see more satellite-TV method.
Do some pretesting to determine the actual needs of your intended inservice. Would it be possible to have written objectives of the inservice so that we could determine in advance if the course might meet our own needs.
Was too basic on futures. Needed more time on options.
It was a very worthwhile evening.
Need to have satellite first! Need more time on satellite. Need to give ideas on how to incorporate to school such as a part of a unit from plant to market or just use as a seperate marketing unit.
Excellent inservice, I wish they were all like this.
Need to spend more time on options but the rest was a good review.
Helpful session as had a good mix of ISU, industry and teachers.

Ottumwa

Was okay for me but for many might have been "low key".
Futures were very basic, but understand the reason for this. Option marketing session was great.
Excellent speaker!! Very knowledgable and he put it at an understanding level.
Great speaker, very knowledgable especially on options. Dr. Carter dodged all the good questions, use the telenet more often.
Need more time on TV satellite for questions! Good materials - resource people.
VHS tape for review would be handy.
Option explanation was real good. Broker did a good job. TV was pretty basic not much value - was it to show a teaching strategy or to educate.
Overheads on satellite were hard to see and were a bit elementary. Please keep cranking out information on marketing and futures.

Waterloo

Very good resource man.
Broker maybe over emphasized speculating aspect! Should have talked more on hedging.
The topic was too big for the given time.
Very good!!
How about videotaping these types of programs so we could use the tapes as a media option.
The TV method was excellent. I needed more basic information on options and not on hedging. The broker was interesting at times and way over my head at others.
Can a videotape be made in this area, it would be much better than any booklet that you can come up with. My students would really enjoy this.

Why isn't Dr. Deiters program being videotaped and made available to Vo-Ag departments? This would be good material to show students during a marketing unit or to an adult farmer class. A complete program would be an excellent tool. Bring the experts into the classroom with video programs. Like the broker because of ability to interact. Disliked satellite because I already know this information.

I worked as a broker for 2 years so technical information was not helpful. The program was interesting and I did receive some helpful information.

The transparencies that Dr. Deiter had - we should have had copies to follow along. Spend more time doing simple calculations while explaining the terms.

The broker was interesting.

The broker spent too much time talking about options and not about executing an option or hedge.

Too much time for introductions. We had already been over that. Carter kept reading options questions and had not even discussed them yet. Why not "Thank You" after the program rather than take the instruction time. When we have already been over the introductory material, etc. then get right into the meat of the program. Leave off all the comments and get to the meat. Fifteen minutes of more time could have been used for "instruction".

The speaker was very honest and thought provoking. The rest of the program was too elementary.

Dr. Julia Gamon
Assistant Professor
Dept. of Agricultural Education
Iowa State University
Ames, IA 50011

Integrated Pest Management

Vo-Ag Inservice Education

Please circle a rating for each item. Your ratings will help us to evaluate tonight's program and plan for future inservice programs.

	Low				High	Means
1. The program was interesting	1	2	3	4	5	4.11
2. I gained ideas which will be of value to me in my work.	1	2	3	4	5	4.08
3. My technical knowledge in the area of pest management was increased.	1	2	3	4	5	3.78
4. My technical knowledge in the area of insect identification was increased.	1	2	3	4	5	3.73
5. I received helpful materials.	1	2	3	4	5	4.14
6. I liked the Friday evening format.	1	2	3	4	5	3.72

Comments:

Over

Integrated Pest Management
Vo-Ag Inservice Education
April 24, 1987

How about more time or a workshop just on water quality.

Excellent! Thanks! Next to the Diversified Ag. Summer inservices, this is the best inservice I can recall.

Extend time and provide more hands on.

More hands on learning. Forget the overheads and slides.

More I.D., less slides and more participation from the group. Ratings of 4 were due to being a horticulturalist and not having a previous experience in corn!! The IPM could have covered a broader area instead of limiting it to one facet.

More hands on. A whole day outside!

Keep moving fast.

Slide set provided in packet would of helped.

Being a teacher educator you should know better than to go over time. It's very unfair to your speakers. Things were fine other than you not being prepared time wise!

Very good. Now we need some more hands on. More handling of actual plants with insect and disease problems.

O.K.

Do it again.

Excellent.

Fruit, Vegetable and Sod Inservice Program
June 17 & 18, 1987

An inservice program on fruits/vegetables and sod was held June 17 and 18, 1987, at the Iowa State University Horticulture Research Farm. The all-day program on Wednesday, June 17, 1987, was a joint venture planned for vocational agriculture instructors and county agriculturists from the Cooperative Extension Service. Ninety-seven attended; 31 of these were agriculture teachers. On Thursday, the teachers and extension agriculturists attended the annual Sod Field Day, along with about 500 commerical producers and users.

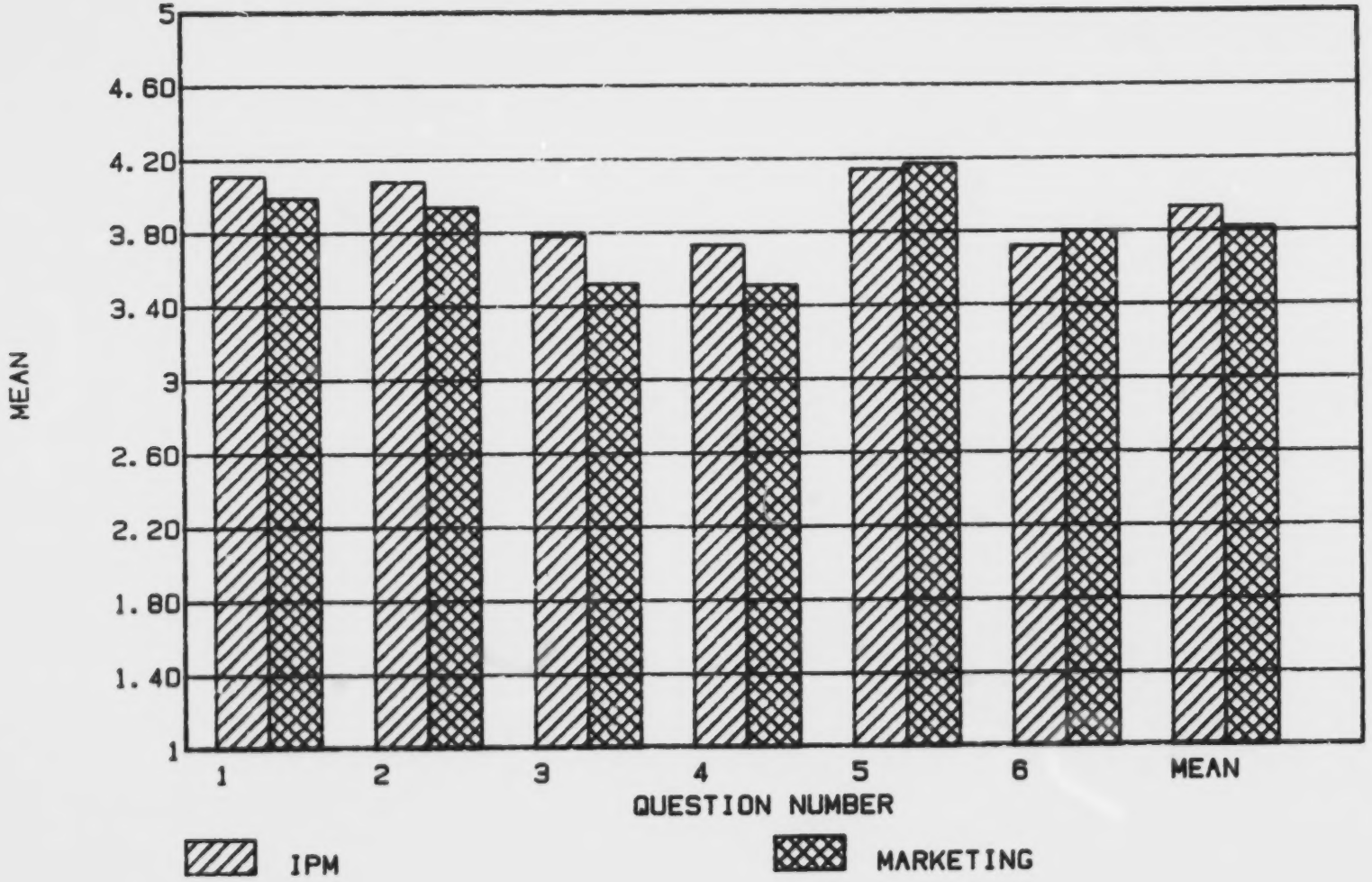
Purpose of the program was to provide technical update on new cultivars and practices related to production and marketing of fruits/vegetables and sod. Objectives were to make efficient use of the Horticulture Research Farm and to increase cooperation among teachers and Extension agents at the local level. The inservice program provided an opportunity for them to share rides and program ideas.

The program included sessions on insect update, disease control, turf diversification and crop budgeting. Program presentors were Paul Domoto, Gayle Nonnecke, Hank Taber, Mark Gleason, Mike Agnew, and Don Lewis. The group toured research plots of mulch, cultivars, and irrigation. Equipment demonstrations included mulch layering, planting, spraying, mowing, cultivation and tree moving.

The program was not formally evaluated, but it was evident that participants were interested. The weather was miserably hot, yet people were asking questions, taking notes and shooting pictures.

Julia Gamon
Assistant Professor
ISU - Ag. Ed. Dept.

INSERVICE EVALUATIONS



To: Agricultural Instructors

From: Julia Gamon

Julia Gamon
Agricultural Education Dept., ISU

Re: Fall In-Service Meeting

You are invited to a workshop on marketing and futures, Thursday evening, October 30, 1986 from 5:00 to 9:00 p.m. Locations will be Ames, Waterloo, Emmetsburg, Ottumwa and Creston. Specific locations and directions will be sent to those returning the registration blank.

Marketing has become an increasingly important aspect of a production system as profit margins have become increasingly smaller. Judicious marketing through a well-developed marketing plan based on an understanding of futures can increase profits. The agricultural instructor with a thorough knowledge of marketing plans, futures, and the mechanics of futures trading will be better able to instruct students.

WORKSHOP OBJECTIVES WILL BE TO:

1. Update technical expertise regarding marketing of agricultural products.
2. Gain new ideas and teaching materials for marketing plans, futures markets and the mechanics of futures trading.

Each instructor attending will receive a copy of new marketing materials developed by Deiter, Carter, Green, and Klocke. These materials are being tested this fall by 21 instructors. Instructors will also receive a packet of teaching aids being prepared by the ISU Agricultural Education Department.

THE EVENING PROGRAM WILL FEATURE:

1. Live televised presentation on Futures Market by Dr. Ron Deiter of the Ag. Economics Department at Iowa State University. There will be an opportunity for questions directed to Dr. Deiter.
2. A local broker discussing marketing plans.
3. Vo-Ag Instructors sharing their teaching strategies.

Iowa State University, the Department of Public Instruction, Area Community Colleges and local school districts are cooperating to provide this in-service activity. Faculty members of the Agricultural Education Department at Iowa State University will be conducting the program.

Cost of the inservice will be $10.00 which will include the evening meal and a portion of the costs. Because of time constraints, the meal will be catered in at most locations.

Anyone interested in graduate credit related to in-service is urged to return the slip from the enclosed sheet on Agricultural Education Graduate Credit. These procedures were developed in response to a request from the IVATA Pre-service/In-service Committee.

I will attend the marketing workshop at the following location:

_____ Ames (WOI)

No Waterloo (Hawkeye Tech)

_____ ~~Emmetsburg~~ Estherville –

_____ Ottumwa

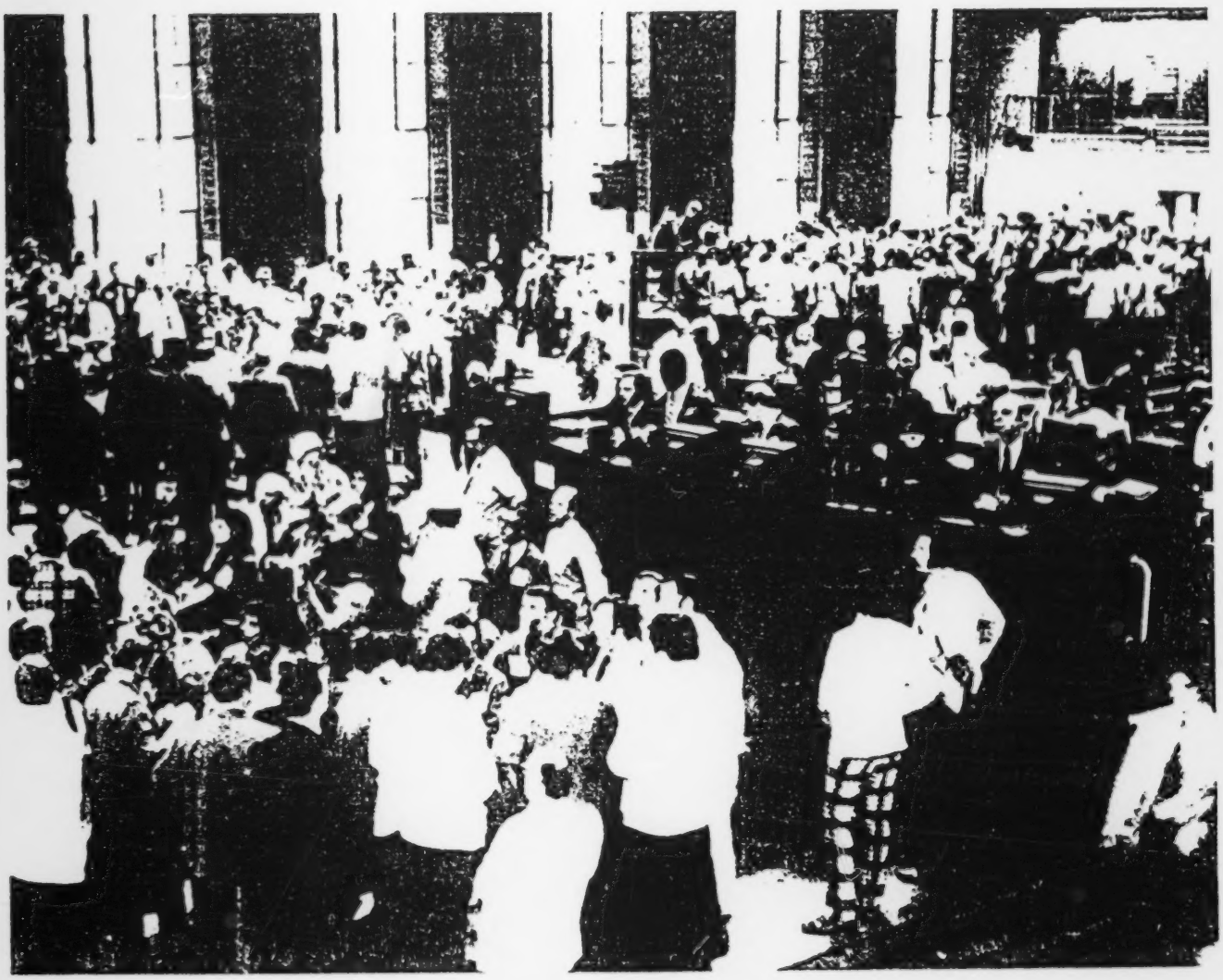
_____ Creston

Enclosed please find payment of $10.00 or school voucher for registration and meal. Please make checks payable to Iowa State University.

Name _____ School _____

Mail before October 20, 1986 to: Dr. Julia Gamon, 217 Curtiss Hall, Iowa State University, Ames, IA 50011

Using Grain Futures in the Farm Business



Cooperative Extension Service
Iowa State University
Ames, Iowa 50011

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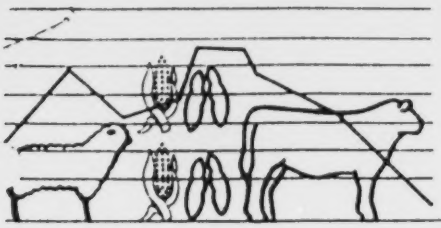


Seasonal Price Patterns of Agricultural Products

Agricultural commodities have historically had an inherent seasonality in their price behavior. U.S. grain prices usually come under selling pressure at harvest time due to the heavy volume of grain sold in the cash market or hedged in the futures market. The meat industry also experiences seasonality in the prices of livestock since farrowing, calving, and lambing are largest during periods of the year when weather is comparatively mild. This, in turn, results in larger marketings of finished animals at later dates when these animals reach maturity. The result is that there is some degree of predictability in the seasonal price behavior of the various agricultural commodities.

In managing a livestock enterprise, seasonal price indexes can be used to determine optimum breeding dates and/or feeding programs to take advantage of periods of seasonally strong livestock prices. In marketing grain, examining seasonal price indexes in conjunction with the current price outlook will give some indication of whether storage of the crop is likely to be profitable.

The price indexes in this publication show the average seasonal price variation of several agricultural commodities over the period 1973-81. They are expressed as a percentage of the moving average price and have been adjusted to a base of 100. The moving average price incorporates the effects of inflation, cyclical changes in production, changes in technology, and other factors that affect prices gradually. It eliminates any short-term price influences on the seasonal price index.

There are two parts to the seasonal price analysis presented in this publication. The first is the average price pattern, which appears as the solid line connecting the monthly indexes. Using the base of 100, points above 100 indicate usual periods of seasonally strong prices while those below 100 are periods of weakness.

The second part is the monthly variability indexes. These are the narrow vertical bars stretching above and below each monthly price index. The bars represent the reliability of that particular index and indicate the range where the index for that month could be expected to fall 95 percent of the time. Although the price index appears as a point on the graph for a particular month, it may vary above or below that figure by the percentage points indicated below the graph. For example, if the monthly price index for a commodity is 102 with a variability index of ±4.0, the price for some particular

Summary of seasonal highs, lows, and variabilities of several commodities

Commodity	Month(s) of highest seasonal price index	Month(s) of lowest seasonal price index	Month(s) of highest variability	Month of lowest variability
Iowa-So. Minn. slaughter hogs	August	April	August	December
Iowa-So. Minn. feeder pigs	April	January, July	October	March
Omaha slaughter steers	July, August	February	August	October
Omaha feeder steers	October	January	August	October
Iowa-So. Minn. slaughter lambs	May	September	August	November
Iowa cash corn	August	November	August	January
Iowa cash soybeans	August	February	May, August	January
U.S. wheat	September, October	June	June, July	April
U.S. eggs	December	June	August	November

Cooperative Extension Service
Iowa State University
Ames, Iowa 50011

Pm 1104 | June 1983

Marketing Problem

INPUTS

1. Current Price.
2. # of Bushels Harvested.
3. Minimum Storage Charge.
4. Months Included in Minimum.
5. Charge/Month over Minimum.
6. Annual Interest Rate.
7. Crop Value at Harvest.

RULES

1. Must sell crop at harvest or during one of the five selling periods listed by the Chicago Board of Trade.
2. Can sell all or part of crop at any time.
3. Must sell in 5000 bushel parcels.

MATERIAL GIVEN

1. Prices on the Chicago Board of Trade for Five Different Trading Periods,Dec., Mar., May, July, Sept
2. Storage Costs.
3. Interest Costs.
4. List of Available Options.
5. Seasonal Grain Price Patterns.

Goal

* Realize the greatest profit from that crop by using all your marketing options.

Example of Chicago Board of Trade Information

CORN

5000 bu minimum; dollars per bushel

Dec	1.65 1/4	1.67 3/4	1.65	1.65 3/4	+.00 3/4
Mar	1.77	1.78 1/4	1.76	1.76 1/2	+.00 1/2
May	1.82 1/4	1.84	1.82 1/4	1.82 3/4	+.00 3/4
Jul	1.84 1/2	1.86 1/2	1.84 1/2	1.85 1/2	+.001/4
Sep	1.85 1/2	1.86	1.85 1/4	1.85 1/2	

Each student will be given five of these examples which will represent five different seasons of the year.

Marketing
Hedging Problem - Farmer A. Okay

Name _____

It is December and Farmer A. Okay is considering hedging some of his soybeans for sale during the following July. Suppose the July soybean futures contract is selling for $6.75 per bushel in December. The expected basis for July is $.40/bushel and the expected brokerage and interest cost is $.04/bushel. If it will cost $5.25 to produce a bushel of soybeans, can Farmer Okay "Lock In" a Profitable Price? _____

July futures price in December: _____ per bushel

Minues expected basis: - _____ per bushel

Minus brokerage fee & interest: - _____ per bushel

**Target Hedged price locally: _____ per bushel

Let's assume that Farmer Okay did hedge some soybeans in December by selling a July futures contract. When July arrived the price of soybeans were $6.80 per bushel (locally) and $7.20 per bushel (July Futures). The hedge is closed out by selling the soybean crop locally and buying back the July futures contract. Complete the expected results below:

Cash price received: _____ per bushel

Futures transaction: Sold at: _____ per bushel

Bought back at: _____ per bushel

Profit on futures: _____ per bushel

Total price per bushel received from cash sales plus the profit from the futures transaction: _____ per bushel

Minus cost of futures transaction: - _____ per bushel

Net Price Received: _____ per bushel

Minus cost of production: - _____ per bushel

Net Profit: _____ per bushel

What other cost should be taken into account for this problem?

Marketing
Hedging Problem - Farmer A. Okay

Name Key

It is December and Farmer A. Okay is considering hedging some of his soybeans for sale during the following July. Suppose the July soybean futures contract is selling for $6.75 per bushel in December. The expected basis for July is $.40/bushel and the expected brokerage and interest cost is $.04/bushel. If it will cost $5.25 to produce a bushel of soybeans, can Farmer Okay "Lock In" a Profitable Price? yes

July futures price in December: $6.75 per bushel

Minues expected basis: - .40 per bushel

Minus brokerage fee & interest: - .04 per bushel

**Target Hedged price locally: 6.31 per bushel

Let's assume that Farmer Okay did hedge some soybeans in December by selling a July futures contract. When July arrived the price of soybeans were $6.80 per bushel (locally) and $7.20 per bushel (July Futures). The hedge is closed out by selling the soybean crop locally and buying back the July futures contract. Complete the expected results below:

Cash price received: 6.80 per bushel

Futures transaction: Sold at: 6.75 per bushel

Bought back at: 7.20 per bushel

Profit on futures: -.45 per bushel

Total price per bushel received from cash sales plus the profit from the futures transaction: 6.35 per bushel

Minus cost of futures transaction: - -.04 per bushel

Net Price Received: 6.31 per bushel

Minus cost of production: - 5.25 per bushel

Net Profit: 1.06 per bushel

What other cost should be taken into account for this problem?

Marketing
Hedging Problem - Farmer A. Noway

Name _____

It is December and Farmer Noway is considering hedging some of his soybeans for sale during the following July. Suppose the July soybean futures contract is selling for $7.45 per bushel in December. The expected basis for July is $.40/bushel and the expected brokerage and interest cost is $.04/bushel. If it will cost $5.25 to produce a bushel of soybeans, can Farmer Noway "Lock In" a Profitable Price? _____

July futures price in December: _____ per bushel

Minus expected basis: - _____ per bushel

Minus brokerage fee & interest: - _____ per bushel

**Target Hedged price locally: _____ per bushel

Let's assume that Farmer Noway did hedge some soybeans in December by selling a July futures contract. When July arrived the price of soybeans were $6.70 per bushel (locally) and $7.10 per bushel (July Futures). The hedge is closed out by selling the soybean crop locally and buying back the July futures contract. Complete the expected results below:

Cash price received: _____ per bushel

Futures transaction: Sold at: _____ per bushel

Bought back at: _____ per bushel

Profit on futures: _____ per bushel

Total price per bushel received from cash sales plus the profit from the futures transaction: _____ per bushel

Minus cost of futures transaction: - _____ per bushel

Net Price Received: _____ per bushel

Minus cost of production: - _____ per bushel

Net Profit: _____ per bushel

What other cost should be taken into account for this problem?

Marketing
Hedging Problem - Farmer A. Noway

Name Key

It is December and Farmer Noway is considering hedging some of his soybeans for sale during the following July. Suppose the July soybean futures contract is selling for $7.45 per bushel in December. The expected basis for July is $.40/bushel and the expected brokerage and interest cost is $.04/bushel. If it will cost $5.25 to produce a bushel of soybeans, can Farmer Noway "Lock In" a Profitable Price? yes

July futures price in December: $7.45 per bushel

Minus expected basis: - .40 per bushel

Minus brokerage fee & interest: - .04 per bushel

**Target Hedged price locally: 7.01 per bushel

Let's assume that Farmer Noway did hedge some soybeans in December by selling a July futures contract. When July arrived the price of soybeans were $6.70 per bushel (locally) and $7.10 per bushel (July Futures). The hedge is closed out by selling the soybean crop locally and buying back the July futures contract. Complete the expected results below:

Cash price received: 6.70 per bushel

Futures transaction: Sold at: 7.45 per bushel

Bought back at: 7.10 per bushel

Profit on futures: .35 per bushel

Total price per bushel received from cash sales plus the profit from the futures transaction: 7.05 per bushel

Minus cost of futures transaction: - .04 per bushel

Net Price Received: 7.01 per bushel

Minus cost of production: - 5.25 per bushel

Net Profit: 1.76 per bushel

What other cost should be taken into account for this problem?

Marketing
Hedging Problem - Farmer Dewey

Name _____

It is March and Farmer Dewey is considering hedging some of his soybeans for sale during the following November. Suppose the November soybean futures contract is selling for $7.50 per bushel in March. The expected basis for November is $.45/bushel and the expected brokerage and interest cost is $.05/bushel. If it will cost $5.50 to produce a bushel of soybeans, can Farmer Dewey "Lock In" a Profitable Price? _____

November futures prices in March: _____ per bushel

Minus expected basis: - _____ per bushel

Minus brokerage fee & interest: - _____ per bushel

**Target Hedged price locally: _____ per bushel

Let's assume that Farmer Dewey did hedge some soybeans in March by selling a November futures contract. When November arrived the price of soybeans was $6.70 per bushel (locally) and $7.10 per bushel (November Futures). The hedge is closed out by selling the soybean crop locally and buying back the November futures contract. Complete the expected results below:

Cash price received: _____ per bushel

Futures transaction: Sold at: _____ per bushel

Bought back at: _____ per bushel

Profit on futures: _____ per bushel

Total price per bushel received from cash sales plus the profit from the futures transaction: _____ per bushel

Minus cost of futures transaction: - _____ per bushel

Net Price Received: _____ per bushel

Minus cost of production: - _____ per bushel

Net Profit: _____ per bushel

Marketing
Hedging Problem - Farmer Dewey

Name Key

It is March and Farmer Dewey is considering hedging some of his soybeans for sale during the following November. Suppose the November soybean futures contract is selling for $7.50 per bushel in March. The expected basis for November is $.45/bushel and the expected brokerage and interest cost is $.05/bushel. If it will cost $5.50 to produce a bushel of soybeans, can Farmer Dewey "Lock In" a Profitable Price? yes

November futures prices in March: $7.50 per bushel

Minus expected basis: - .45 per bushel

Minus brokerage fee & interest: - .05 per bushel

**Target Hedged price locally: 7.00 per bushel

Let's assume that Farmer Dewey did hedge some soybeans in March by selling a November futures contract. When November arrived the price of soybeans was $6.70 per bushel (locally) and $7.10 per bushel (November Futures). The hedge is closed out by selling the soybean crop locally and buying back the November futures contract. Complete the expected results below:

Cash price received: 6.70 per bushel

Futures transaction: Sold at: 7.50 per bushel

Bought back at: 7.10 per bushel

Profit on futures: .40 per bushel

Total price per bushel received from cash sales plus the profit from the futures transaction: 7.10 per bushel

Minus cost of futures transaction: - .05 per bushel

Net Price Received: 7.05 per bushel

Minus cost of production: - 5.50 per bushel

Net Profit: 1.55 per bushel

Ag Marketing Name _____
Speculating with Futures Markets

1. I. M. Broke is speculating on the futures market with corn futures contracts. He bought three July corn contracts (5000 bushels each) in January at $3.00/bushel. In May he sells the three contracts when July corn futures are at $2.75. What amount of money has he made or lost?

Sell _____

Minus Purchase _____

Gain or loss _____

2. Freddy Frogfarmer is speculating on the futures market with oats futures contracts. He bought three July oats contracts (5000 bushels each) in January at $1.60/bushel. In May he sells the three contracts when July oats futures are at $2.05. What amount of money has he made or lost?

Sell _____

Minus Purchase _____

Gain or loss _____

3. Gwenda Growmore is speculating on the futures market with hog futures contracts. She sells two October hog contracts (30,000 lbs. each) in March $53.00/cwt. In May she buys the two contracts when October hog futures are at $48.50/cwt. What amount of money has she made or lost?

Sell _____

Minus Purchase _____

Gain or loss _____

4. Farmer Wild Kyle is speculating on the futures market with wheat futures contracts. He bought ten September wheat contracts (5000 bushels each) in January at $3.00/bushel. In July he sells the ten contracts when September wheat futures are at $3.75. What amount of money has he made or lost?

Sell _____

Minus Purchase _____

Gain or loss _____

5. Famous country singer, Cathy Hemann is speculating on the futures market with cattle futures contracts. She sold two August cattle contracts (30,000 lbs. each) in April at $65.00/cwt. In July she buys two contracts when August cattle futures are at $68.50/cwt. What amount of money has she made or lost?

Sell _____

Minus Purchase _____

Gain or loss _____

Ag Marketing
Speculating with Futures Markets

Name Key

1. I. M. Broke is speculating on the futures market with corn futures contracts. He bought three July corn contracts (5000 bushels each) in January at $3.00/bushel. In May he sells the three contracts when July corn futures are at $2.75. What amount of money has he made or lost?

Sell 41,250
Minus Purchase 45,000
Gain or loss -3,750

2. Freddy Frogfarmer is speculating on the futures market with oats futures contracts. He bought three July oats contracts (5000 bushels each) in January at $1.60/bushel. In May he sells the three contracts when July oats futures are at $2.05. What amount of money has he made or lost?

Sell 30,750
Minus Purchase 24,000
Gain or loss 6,750

3. Gwenda Growmore is speculating on the futures market with hog futures contracts. She sells two October hog contracts (30,000 lbs. each) in March $53.00/cwt. In May she buys the two contracts when October hog futures are at $48.50/cwt. What amount of money has she made or lost?

Sell 31,800
Minus Purchase 29,100
Gain or loss 2,700

4. Farmer Wild Kyle is speculating on the futures market with wheat futures contracts. He bought ten September wheat contracts (5000 bushels each) in January at $3.00/bushel. In July he sells the ten contracts when September wheat futures are at $3.75. What amount of money has he made or lost?

Sell 187,500
Minus Purchase 150,000
Gain or loss 37,500

5. Famous country singer, Cathy Hemann is speculating on the futures market with cattle futures contracts. She sold two August cattle contracts (30,000 lbs. each) in April at $65.00/cwt. In July she buys two contracts when August cattle futures are at $68.50/cwt. What amount of money has she made or lost?

Sell 39,000
Minus Purchase 41,100
Gain or loss -2100

THE THREE M'S

MAKING MONEY

THROUGH

MARKETING

A marketing plan simulation for Vo-Ag Students,
developed by Randy Bowman and Dr. Julia Gamon,
Graduate Assistant and Assistant Professor,
Agricultural Education Department,
Iowa State University.

MARKETING PROBLEM

PURPOSE

To expose students to marketing possibilities.

RESPONSIBILITIES OF THE INSTRUCTOR

The instructor is to provide background material on the types of marketing possibilities available to the student and allow ample time for the student to complete each exercise before providing background material for the next.

RESPONSIBILITIES OF THE STUDENT

The student is to use marketing possibilities to realize the greatest profit from his crop.

STUDENT INSTRUCTIONS

Each student will be given 40,000 bushels of grain which was harvested on October 23. They will also be given market information from the Chicago Board of Trade for that date. It is then up to the student to decide how to market that grain through the coming year to obtain the highest profit.

INSTRUCTIONS FOR THE TEACHER

The instructor will be provided with market data for five different months during the year that will correspond to the delivery months used by the Chicago Board of Trade. The instructor will dispense the harvest data when the problem is presented to the student and after allowing an ample period of time will give the student the next set of data. Instructor is to provide background data on the possible ways to market grain.

MARKETING

Instructor Directions

You are to provide the student with the necessary information to complete the problem. Information included in this packet are:

1. Storage inputs and costs for six different trading periods.
2. Cash prices at the local elevator and actual Chicago Board of Trade prices for six different trading periods.
3. The seasonal price pattern for #2 yellow corn.
4. A page of student directions.

The student is instructed as to how to sell their grain. The problem is meant to be flexible to allow the student to explore marketing possibilities.

An outline for the presentation of this problem to the student may preceed like this:

Day One -
1. Introduce the problem and stress the importance of marketing.
2. Explain the rules.
3. Discuss the materials to be given to the student - explain how to read and use them and do some preliminary calculations.
4. Explain the goal and relate the importance of a good marketing plan to realizing a profit from farming.
5. Present the first trading period material (October 23) to the student and explain the student's alternative choices.

You must then decide how much time you will allow the student to complete the first portion of the problem. This will vary depending upon your time frame. After this time has passed, present the trading information for the second trading period (December 4). The student will then have to decide to hold the grain not previously sold or sell the grain for cash or on a futures contract. Introduce the next four trading periods in the same context.

You may want to add some questions for the students to answer, so space has been provided at the bottom on the trading sheets for the inclusion of these questions into the problem.

MARKETING

Student Directions

You have just harvested 40,000 bushels of #2 yellow corn and finished the harvest on October 23. What are you going to do with this grain?

You have three alternatives; sell your grain now at the cash price being paid at the local elevator, hold your grain in storage to sell at a later date, or futures contract the sale of your grain for delivery at later date.

Harvest prices, storage costs, interest costs, and seasonal price patterns will be provided to you by the instructor.

At harvest you will recieve the cash price being paid at the local elevator, the Chicago Board of Trade prices for future delivery and the seasonal price patterns. After a specified period of time to be determined by the instructor you will be given the cash price in December as well as the Chicago Board of Trade prices for future delivery. You will recieve cash prices and futures prices for four more trading periods. The total six trading opportunities constitute a year in time. You must sell your grain within that year's time period. During any one of these time periods you may sell your grain for the cash price, or store it longer hoping the price will rise, or futures contract your grain. You can sell all or part of your grain by any method during any one time period but you must sell your grain in 5000 bushel parcels.

Your goal is to achieve the greatest profit from that 40,000 bushels of corn.

Marketing Problem

MATERIAL PROVIDED BY INSTRUCTOR

1. Current Price.
2. # of Bushels Harvested.
3. Storage Inputs and Costs.
4. Annual Interest Rate.
5. Crop Value at Harvest and at the Five Selling Periods.
6. Chicago Board of Trade Prices for Five Different Selling Periods.
7. Seasonal Grain Price Patterns (Pm-1104).

RULES

1. Must Sell Crop at Harvest or During One of the Five Selling Months listed by the Chicago Board of Trade.
2. Can Sell All or Part of Crop at Any Time.
3. Must Sell in 5000 Bushel Parcels.
4. Can Sell at Harvest for Cash or on a Futures Contract, Store and Sell Later for Cash or Futures During One of the Five Selling Periods.

STUDENT RESPONSIBILITIES

1. Complete Storage Input Sheet.
2. Use Board of Trade Sheets to Decide When or How to Market.

GOAL

* Realize the Greatest Profit from that Crop by Using All Your Marketing Possibilities.

MARKETING

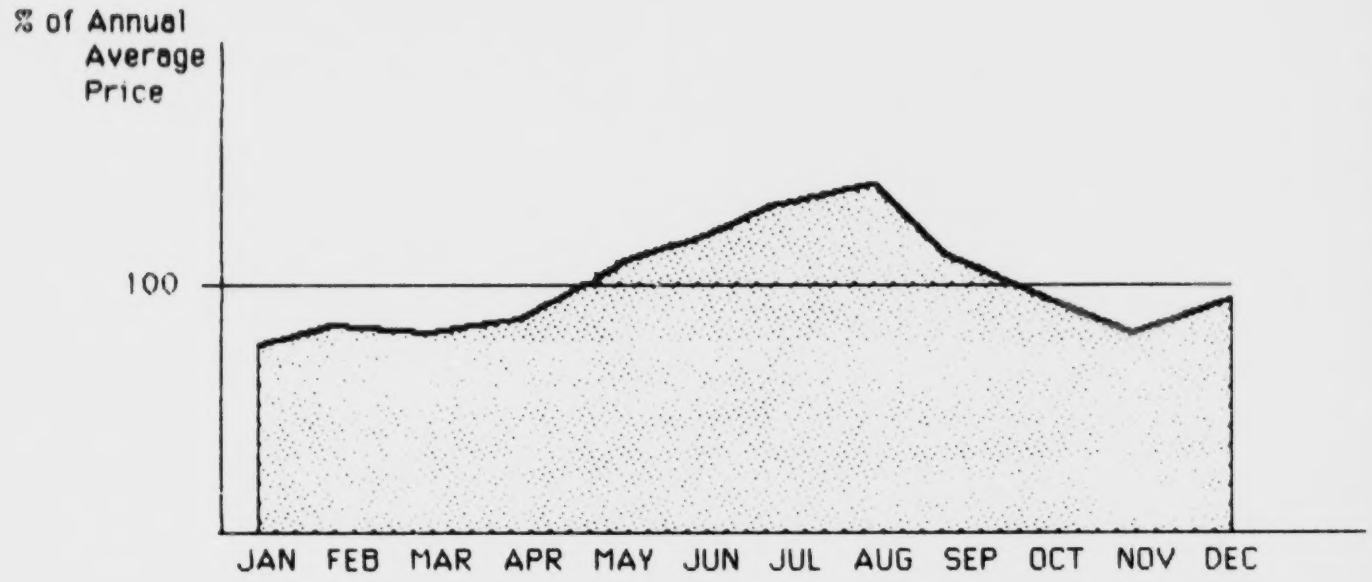
Worksheet **Name:** _____

Date	Oct. 23	Dec. 4	Mar. 1	May 1	Jul. 2	Sep. 4
Bushels Remaining	40,000					
Bushels sold for Cash or Futures						
Selling Price						
Storage Costs						
Interest Costs						
Net Profit						
Amount Recieved For Grain Sold						

Total Profit Realized Through Sale of Grain _____

SEASONAL PRICE PATTERNS FOR GRAIN*

CORN - CHICAGO CASH (NO. 2 YELLOW)



Pattern shows harvest time weakness with a modest price rise in December as sales decline from harvest peaks. Prices tend to weaken again in January-April as sales volume picks up due to increased producer marketing to meet cash flow needs. Prices usually strengthen in the summer as the old crop is used up and inventories in the pipeline decrease.

The greatest price variability occurs in August. The lowest price variability is in the December-January period. Price variability refers to the spread in prices during that time period. The solid line in the graph represents the average of the price variability for each month.

*Seasonal Price Patterns of Agricultural Products, Iowa State University Extension Publication, Pm-1104.

MARKETING

STORAGE INPUTS

OCTOBER 23

Current Price ($/bu)	2.48	Minimum Storage Charge ($)	.10
Number of Bushels Harvested	40,000	Months Included in Minimum	3
% Shrinkage	0.50	Charge/Month over Minimum ($)	.02
		Annual Interest Rate	%10

Net Dry Grain _____ Total Crop Value at Harvest _____

STORAGE COSTS

Months in Storage	Break-Even Price ($/bu)	Difference ($/bu)	Storage Costs ($/bu)	Interest Costs ($/bu)
1	2.60	.12	.10	.02
2	2.62	.14	.10	.04
3	2.64	.16	—	.06
4	2.69	—	.12	.09
5	2.73	.25	.14	.11
6	2.77	.29	.16	.13
7	—	.33	.18	.15
8	2.86	.38	—	.18
9	2.90	.42	.22	.20
10	2.95	.47	.24	.23
11	2.99	.51	.26	.25
12	—	—	.28	.27

MARKETING (Key)

STORAGE INPUTS

OCTOBER 23

Current Price ($/bu)	2.48	Minimum Storage Charge ($)	.10
Number of Bushels Harvested	40,000	Months Included in Minimum	3
% Shrinkage	0.50	Charge/Month over Minimum ($)	.02
		Annual Interest Rate	%10
Net Dry Grain	39,800	Total Crop Value at Harvest	$98,704

STORAGE COSTS

Months in Storage	Break-Even Price ($/bu)	Difference ($/bu)	Storage Costs ($/bu)	Interest Costs ($/bu)
1	2.60	.12	.10	.02
2	2.62	.14	.10	.04
3	2.64	.16	.10	.06
4	2.69	.21	.12	.09
5	2.73	.25	.14	.11
6	2.77	.29	.16	.13
7	2.81	.33	.18	.15
8	2.86	.38	.20	.18
9	2.90	.42	.22	.20
10	2.95	.47	.24	.23
11	2.99	.51	.26	.25
12	3.03	.55	.28	.27

CHICAGO BOARD OF TRADE PRICES

CASH PRICE OCTOBER 23 - 2.48 (Local Elevator)

OCTOBER 23

CORN
5000 bu minimum; dollars per bushel

	Open	High	Low	Settle	Change
Dec	2.78	2.79	2.76	2.64 1/2	-.02 1/2
Mar	2.85	2.85 3/4	2.83	2.71 1/4	-.02 1/4
May	2.90 1/2	2.91 1/2	2.86 1/2	2.74 1/2	-.02 1/2
Jul	2.93 3/4	2.95	2.92	2.67 3/4	-.02
Sep	2.89	2.90	2.87 1/2	2.63	-.01 3/4

Use this sheet to determine if you should hold your grain or sell by using one of the possibilities.

STORAGE INPUTS

DECEMBER 4

Current Price ($/bu)	2.35	Minimum Storage Charge ($)	.10
Number of Bushels in Storage	_____	Months Included in Minimum	3
% Shrinkage	0.50	Charge/Month over Minimum ($)	.02
		Annual Interest Rate	%10
Net Dry Grain	_____	Total Crop Value in Storage	_____

STORAGE COSTS

Months in Storage	Break-Even Price ($/bu)	Difference ($/bu)	Storage Costs ($/bu)	Interest Costs ($/bu)
1	2.47	.12	.10	.02
2	2.49	.14	.10	.04
3	2.51	.16	.10	.06
4	2.55	.20	.12	.08
5	2.59	.24	.14	.10
6	2.63	.28	.16	.12
7	2.68	.33	.18	.15
8	2.72	.37	.20	.17
9	2.76	.41	.22	.19
10	2.80	.45	.24	.21
11	2.85	.50	.26	.24
12	2.89	.54	.28	.26

CHICAGO BOARD OF TRADE PRICES

CASH PRICE DECEMBER 4 - 2.35 (Local Elevator)

DECEMBER 4

CORN
5000 bu minimum; dollars per bushel

	Open	High	Low	Settle	Change
Dec	2.66 1/4	2.66 1/2	2.62 1/2	2.63	-.02 3/4
Mar	2.78 1/4	2.79	2.76 1/4	2.76 3/4	-.01 1/2
May	2.85 1/4	2.85 1/4	2.83 1/2	2.84 1/4	-.00 1/4
Jul	2.88 3/4	2.89	2.87 3/4	2.88 1/2	
Sep	2.85 3/4	2.86	2.85 1/4	2.85 1/2	-.00 1/4

Use this sheet to determine if you should hold your grain or sell by using one of the possibilities.

STORAGE INPUTS

MARCH 1

Current Price ($/bu)	2.33	Minimum Storage Charge ($)	.10
Number of Bushels in Storage	_____	Months Included in Minimum	3
% Shrinkage	0.50	Charge/Month over Minimum ($)	.02
		Annual Interest Rate	%10

Net Dry Grain _____ Total Crop Value in Storage _____

STORAGE COSTS

Months in Storage	Break-Even Price ($/bu)	Difference ($/bu)	Storage Costs ($/bu)	Interest Costs ($/bu)
1	2.45	.12	.10	.02
2	2.47	.14	.10	.04
3	2.49	.16	.10	.06
4	2.53	.20	.12	.08
5	2.57	.24	.14	.10
6	2.61	.28	.16	.12
7	2.66	.33	.18	.15
8	2.70	.37	.20	.17
9	2.74	.41	.22	.19
10	2.78	.45	.24	21
11	2.83	.50	.26	.24
12	2.87	.54	.28	.26

CHICAGO BOARD OF TRADE PRICES

CASH PRICE MARCH 1 -2.33 (Local Elevator)

MARCH 4

CORN
5000 bu minimum; dollars per bushel

	Open	High	Low	Settle	Change
Mar	2.63 3/4	2.64 1/2	2.63 1/2	2.64 1/2	+.01
May	2.71 1/4	2.71 3/4	2.70 3/4	2.71 1/4	-.00 1/2
Jul	2.75 3/4	2.75 3/4	2.74	2.74 1/2	-.01
Sep	2.69	2.69	2.67 3/4	2.67 3/4	-.01 1/2
Dec	2.64 1/4	2.64 1/2	2.62 3/4	2.63	-.01 1/2

Use this information to determine if you should hold your grain or sell by using one of the possibilities.

STORAGE INPUTS

MAY 1

Current Price ($/bu)	2.55	Minimum Storage Charge ($)	.10
Number of Bushels in Storage	_____	Months Included in Minimum	3
% Shrinkage	0.50	Charge/Month over Minimum ($)	02
		Annual Interest Rate	%10

Net Dry Grain _____ Total Crop Value in Storage _____

STORAGE COSTS

Months in Storage	Break-Even Price ($/bu)	Difference ($/bu)	Storage Costs ($/bu)	Interest Costs ($/bu)
1	2.67	.12	.10	.02
2	2.69	.14	.10	.04
3	2.72	.17	.10	.07
4	2.76	.21	.12	.09
5	2.80	.25	.14	.11
6	2.84	.29	.16	.13
7	2.89	.34	.18	.16
8	2.93	.38	.20	.18
9	2.98	.43	.22	.21
10	3.02	.47	.24	.23
11	3.07	.52	.26	.26
12	3.11	.56	.28	.28

CHICAGO BOARD OF TRADE PRICES

CASH PRICE MAY 1 - 2.55 (Local Elevator)

MAY 1

CORN
5000 bu minimum; dollars per bushel

	Open	High	Low	Settle	Change
May	2.85 1/4	2.85 1/4	2.81 3/4	2.83 1/4	-.01 1/2
Jul	2.81 1/4	2.82	2.79	2.79 3/4	-.02
Sep	2.71	2.72	2.69	2.70	-.01 1/2
Dec	2.65 1/4	2.66	2.64	2.64 1/4	-.01 1/4
Mar	2.73 1/4	2.74	2.72 1/4	2.72 3/4	-.01

Use this sheet to determine if you should hold your grain or sell by using one of the possibilities.

MARKETING

STORAGE INPUTS

JULY 2

Current Price ($/bu)	2.39	Minimum Storage Charge ($)	.10
Number of Bushels in Storage	_____	Months Included in Minimum	3
% Shrinkage	0.50	Charge/Month over Minimum ($)	.02
		Annual Interest Rate	%10

Net Dry Grain ..... _____ Total Crop Value in Storage .. _____

STORAGE COSTS

Months in Storage	Break-Even Price ($/bu)	Difference ($/bu)	Storage Costs ($/bu)	Interest Costs ($/bu)
1	2.51	.12	.10	.02
2	2.53	.14	.10	.04
3	2.55	.16	.10	.06
4	2.59	.20	.12	.08
5	2.63	.24	.14	.10
6	2.68	.29	.16	.13
7	2.72	.33	.18	.15
8	2.76	.37	.20	.17
9	2.80	.41	.22	.19
10	2.85	.46	24	.22
11	2.89	.50	.26	.24
12	2.94	.55	.28	.27

CHICAGO BOARD OF TRADE PRICES

CASH PRICE JULY 2 - 2.39 (Local Elevator)

JULY 2

CORN
5000 bu minimum; dollars per bushel

	Open	High	Low	Settle	Change
Jul	2.69	2.69 1/4	2.67 1/2	2.67 1/2	-.01 1/2
Sep	2.54 3/4	2.55 1/4	2.52 1/2	2.52 3/4	-.02 3/4
Dec	2.50 1/2	2.51	2.47 1/2	2.47 3/4	-.03 3/4
Mar	2.59 3/4	2.60 1/2	2.57	2.57	-.03 1/2
May	2.63 3/4	2.63 1/2	2.61 1/4	2.61 1/4	-.02 1/2

Use this sheet to determine if you should hold your grain or sell by using one of the possibilities.

STORAGE INPUTS

SEPTEMBER 4

Current Price ($/bu)..... 1.99
Number of Bushels in Storage.... _____
% Shrinkage..... 0.50

Minimum Storage Charge ($)..... .10
Months Included in Minimum..... 3
Charge/Month over Minimum ($).. .02
Annual Interest Rate ..... %10

Net Dry Grain ..... _____

Total Crop Value in Storage .. _____

STORAGE COSTS

Months in Storage	Break-Even Price ($/bu)	Difference ($/bu)	Storage Costs ($/bu)	Interest Costs ($/bu)
1	2.11	.12	.10	.02
2	2.12	.13	.10	.03
3	2.14	.15	.10	.05
4	2.18	.19	.12	.07
5	2.22	.23	.14	.09
6	2.26	.27	.16	.11
7	2.30	.31	.18	.13
8	2.34	.35	.20	.15
9	2.38	.39	.22	.17
10	2.42	.43	.24	.19
11	2.46	.47	.26	.21
12	2.48	.51	.28	.23

CHICAGO BOARD OF TRADE PRICES

CASH PRICE SEPTEMBER 4 -1.99 (Local Elevator)

SEPTEMBER 4

CORN
5000 bu minimum; dollars per bushel

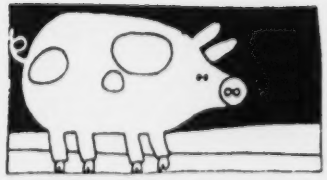
	Open	High	Low	Settle	Change
Sep	2.29	2.29 1/4	2.29 1/4	2.24 1/2	-.05 1/2
Dec	2.18	2.18 1/2	2.15 1/2	2.16 1/4	-.02 1/2
Mar	2.28	2.29	2.25 3/4	2.26 1/2	-.02 1/4
May	2.34 1/4	2.35 3/4	2.32 3/4	2.33 3/4	-.01 1/4
Jul	2.36 1/2	2.39 1/4	2.36 1/2	2.37 1/2	

Use this sheet to determine if you should hold your grain or sell by using one of the possibilities.

IA87PD07

AGRICULTURAL MARKETING

1986



Prepared by James Green, Agriculture Instructor,
Riceville Community School District, Riceville, Iowa 50466
1986

AG MARKETING KNOWLEDGE INVENTORY

Directions: Read each item carefully and select the BEST answer. Write the letter listed in front of the answer you have chosen in the blank provided on the left side of each item.

EXAMPLE:

____ 0. Which of the following would have the most important effect on the supply of feed grains available for marketing each year?
- A. the Soil Conservation Service
- B. weather conditions
- C. the Mafia
- D. soil fertility

- -

____ 1. Changes in price which tend to follow a similar pattern within a year may best be described as
- A. long term price cycles.
- B. elasticity cycles.
- C. diminishing returns patterns.
- D. seasonal price patterns.

____ 2. A marketing plan is
- A. a course of action developed by a farmer that enables him/her to sell a commodity at a time that offers the greatest chance of attaining his/her goals.
- B. in many cases - nonexistent.
- C. often controlled by one major factor such as meeting cash flow needs.
- D. all of the above.

____ 3. Which of the following would not be a reasonable goal to consider when developing a marketing plan?
- A. to provide more price stability and reduce price change risks
- B. to sell above the average price for the year
- C. to best utilize available storage
- D. to sell at the high price for the year

____ 4. Which of the following has increased the need for producers to develop and follow a marketing plan for selling agricultural commodities?
- A. increased price volatility
- B. greater annual price variations
- C. narrower profit margins
- D. all of the above

____ 5. Farmer Hemann will harvest and market 40 bushels per acre from 50 acres of soybeans. He expects to receive $1.00/bushel more by following a marketing plan versus not following a marketing plan. If his expectations hold true, what additional net income should he receive for doing a better job of marketing?
- A. $200
- B. $1000
- C. $2000
- D. $10,000
- E. $20,000

____ 6. What two emotions are most likely to interfere with making sound marketing decisions?
- A. anger and joy
- B. anger and fear
- C. optimism and greed
- D. fear and greed

____ 7. What is meant by "increased price volatility"?
- A. farm commodity prices tend to be more stable
- B. farm commodity prices tend to follow predictable seasonal patterns
- C. farm commodity prices tend to change more often and/or when they do change, they change by a larger amount
- D. farm commodity prices tend to stay high and are not as easily affected by supply and demand information

____ 8. There is a tendency for both crops and livestock prices to follow seasonal price patterns.
- A. true
- B. false

____ 9. During what season of the year would you expect to see the highest prices for crop commodities such as corn and soybeans?
- A. spring
- B. summer
- C. fall
- D. winter

____ 10. A farmer should begin to develop a marketing plan for a crop as soon as that crop has been harvested.
- A. true
- B. false

____ 11. The futures market is
A. a management tool that the farmer can use to possibly reduce the risks of commodity price fluctuations.
B. a management tool that the farmer can use to guarantee a profit in farming.
C. a management tool that the farmer can use so he/she always profits from price changes.
D. all of the above.

____ 12. Which of the following answers correctly lists the commodities which may be priced using a futures contract?
A. corn, soybeans, hogs, cattle, milk
B. corn, soybeans, wheat, hogs, cattle
C. turkeys, hogs, cattle, eggs, milk
D. alfalfa, corn, wheat, soybeans, oats

____ 13. The Chicago Board of Trade
A. trades only futures contracts for crops.
B. trades only futures contracts for livestock.
C. trades mainly futures contracts for crops.
D. trades mainly futures contracts for livestock.

____ 14. Which of the following is not a futures market exchange?
A. Chicago Board of Trade
B. Mid American Commodity Exchange
C. Peoria Board of Trade
D. Chicago Mercantile Exchange

____ 15. Which of the following is a standard contract size?
A. one contract of corn is 10,000 bushels
B. one contract of soybeans is 5,000 bushels
C. one contract of corn is 100 bushels
D. one contract of live hogs is 230 pounds

____ 16. A futures trader who has established a long position on the futures market
A. profits when prices go up and looses when prices go down.
B. profits when prices go down and looses when prices go up.
C. profits when prices go either up or down.
D. profits when prices do not change.

____ 17. Speculators are
A. those individuals who buy and sell futures contracts in an effort to make a profit on the price changes.
B. those individuals who own or will own an equivalent quantity of the commodity at some future date and are using the futures market to "lock in" a price or reduce price risks.
C. those individuals who assume the long position in a futures transaction.
D. not required to pay brokerage fees or margin calls.

____ 18. A hedger
A. is trying to eliminate crop yield uncertainty.
B. either buys or sells a futures contract to protect against an adverse price change of a planned up-coming purchase or sale.
C. is an individual who buys or sells a futures contract in an effort to make a profit on the price changes.
D. plants trees and shrubs around all the farm land that he/she operates.

____ 19. Why does a corn producer hedge his/her corn crop?
A. to maintain a greater degree of flexibility in his/her business
B. to reduce the risk involved with an upward change in the cash price of corn
C. to reduce the risk involved with a downward change in the cash price of corn
D. to reduce corn production and marketing costs

____ 20. A futures contract includes
A. a delivery month.
B. the quantity and quality of commodity traded.
C. a delivery site.
D. all of the above.

____ 21. A bear market is
A. a market that buys and sells bear meat.
B. is a market where prices are expected to go down because of large supplies and/or poor demand.
C. is a market where prices are expected to go up because of limited supplies and/or high demand.
D. a market that will not benefit a person who hedges.

____ 22. In almost all cases, those who trade futures contracts do not intend to take or make delivery of the futures contracts that they are trading.
A. true
B. false

_____ 23. A person who sells a futures contract is promising to _____ of the commodity at an agreed upon price during some future period.
A. store a set amount
B. buy the same contract
C. make delivery
D. take delivery

_____ 24. Money that buyers and sellers of futures contracts deposit with their broker to guarantee performance on a hedging contract is referred to as
A. margin money.
B. basis.
C. a down payment.
D. principal.

_____ 25. A broker is
A. one who executes or carries out the futures trading orders of the hedger or speculator.
B. one who looses a large amount of money speculating with futures contracts.
C. required to pay a brokerage fee to the hedger or the banker that finances the hedger.
D. the individual who owns the futures commodity exchange.

_____ 26. Some typical marketing services available to farmers through their broker include providing marketing advise through personal contact or newsletters as well as providing personal guidance in making and carrying out a futures transactions.
A. true
B. false

_____ 27. Why must traders of futures contracts maintain a margin account?
A. the margin account assures your broker that you will honor your position on the futures market
B. the margin account is used to pay brokerage fees whenever they are due
C. the margin account is used to pay delivery costs if the hedger chooses to make or take delivery of the commodity
D. all of the above

_____ 28. What amount of money is typically required for initial margin when placing a hedge?
A. 1 percent of value of the commodity contract
B. 10 percent of value of the commodity contract
C. 50 percent of value of the commodity contract
D. 100 percent of value of the commodity contract

_____ 29. A margin call will occur when
A. the original futures transaction is initiated by the broker.
B. the market prices go against your hedge and your margin account balance falls below the maintenance margin level.
C. the broker closes out your position on the commodity exchange to offset your initial futures transaction.
D. your banker decides that it is no longer profitable for you to use the futures market.

_____ 30. A brokerage fee is
A. paid to your banker to cover interest costs when you must borrow money to give the broker for your margin account.
B. the broker's charge to you for the service that he or she provides.
C. the speculator's charge to the broker for assuming the risks of price changes.
D. only paid by hedgers and speculators who profit by trading futures contracts.

_____ 31. Which of the following is not a step that would occur when a farmer places a hedge?
A. the process of trading a futures contract begins when the farmer calls his/her commodity broker and places an order.
B. the broker calls the floor of the commodity exchange and gives the order to a person at a desk phone.
C. the person at the desk phone determines the current price from the electronic wall charts and calls the broker to indicate the price at which the futures transaction was completed.
D. the broker will then call the farmer to inform him/her that the futures contract transaction was completed.

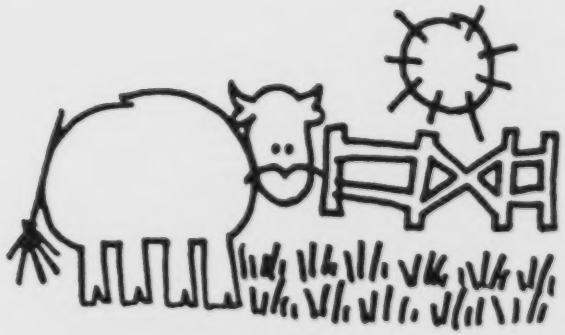
_____ 32. What type of order given to a broker would include a definite price stated by the farmer and restricts the execution of the order to selling for at least the stated price or more, or buying for at least the stated price or less?
A. a margin call order
B. a long position order
C. market-on-close order
D. market-if-touched order

____ 33. A farmer can use grain futures markets to
A. set the price of a growing grain crop any time prior to harvest.
B. set the price of feed without taking immediate delivery.
C. set the price of grain in storage that will be sold at a later date.
D. all of the above.

____ 34. Which statement is false?
A. Futures markets provide protection for both buyers and sellers of farm commodities.
B. The futures market is a management tool that the farmer can use to reduce the risks of price fluctuations on ag commodities.
C. The futures market is something that ordinary farmers should not get involved with because the futures market is too risky & complicated.
D. There are important seasonal patterns in farm commodities that farmers can use in determining the best time to market their commodities.

____ 35. A producer following a good approach to farm marketing should calculate the money lost each year by not selling at the high price of the year.
A. true
B. false

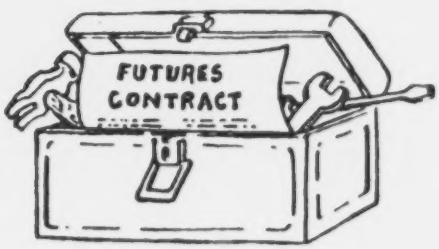
____ 36. A producer following a good approach to farm marketing should calculate total cost/unit of production to determine break-even price.
A. true
B. false



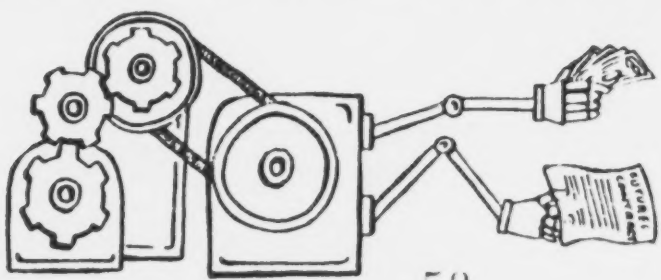
MARKETING AND FUTURES

DEVELOPING A MARKETING PLAN

INTRODUCTION TO FUTURES MARKETS



THE MECHANICS OF BUYING AND SELLING FUTURES CONTRACTS



WHY LOOK AT MARKETS

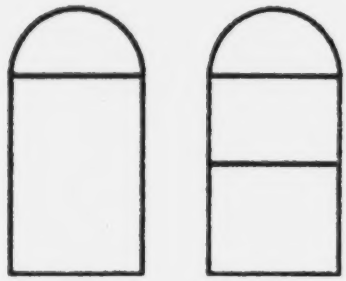
Selling Price		# Bu		
$6.60 (Ave)	X	3000	=	$19,800
$4.95 (-25%)	X	3000	=	$14,850
$8.25 (+25%)	X	3000	=	$24,750

Gross Income		Operating Expense		Profit
$100,000	-	$80,000	=	$20,000
$110,000 (10%)	-	$80,000	=	$30,000 (50%)

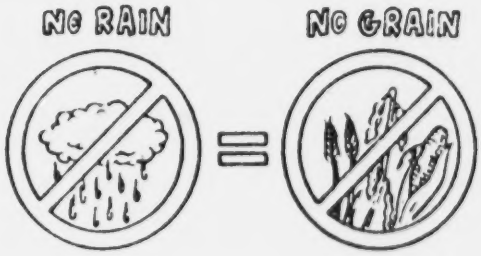
DEVELOPING A

FACTORS AFFECTING MARKETS

Existing Inventories

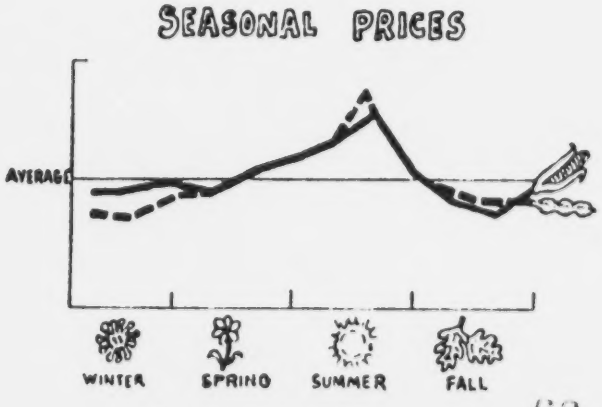


Weather Conditions



Cost of feed

Seasonal Patterns



GOALS AND OBJECTIVES FOR UTILIZING A MARKET PLAN

1. Selling above the average price

2. Maximizing profits

3. Reducing price risks

4. Organizing a marketing plan that will adequately meet cash flow needs

5. Utilizing available storage

6. Tax management

MARKETING PLAN

Involves a number of decisions

1. Whether to establish a price before, during or after a sale

2. When to deliver the commodity

3. When to receive payment for the commodity

4. Storage facilities needed

5. Possible use of basis contracts, forward contracts or futures contracts

MARKET VOLATILITY

	% Change*	Cents/bu**
1960-1969	19.6%	18.2
1970-1979	40.3%	64.8
1980-1984	41.8%	91.0

* Based on differences between high and low monthly average rates.

** High monthly average price - low monthly average price.

GRAIN MARKETING STRATEGIES

Storing for Later Sale

Advantages

1. Prices generally higher
2. Convenient (on-farm storage)
3. More tax and marketing flexibility

Disadvantages

1. Storage cost
2. Possible shrinkage and loss of quality
3. Interest charge on value of grain in storage

GRAIN MARKETING STRATEGIES

Sell at Harvest

Advantages

1. No storage investment
2. Cash payment immediately
3. Takes less marketing management
4. No loss of quality or shrinkage

Disadvantages

1. Historically, lower prices at harvest
2. Lose tax and marketing flexibility
3. Congestion of elevator at harvest time

GRAIN MARKETING STRATEGIES

Forward Contract

Advantages

1. Price established before harvest

2. A place for delivery is assured

3. Quantity contracted can be for any size

Disadvantages

1. Compared to hedging
   a. usually lower price due to elevator's cost of providing contracting services

   b. Requires delivery; cannot be offset

GRAIN MARKETING STRATEGIES

Hedging

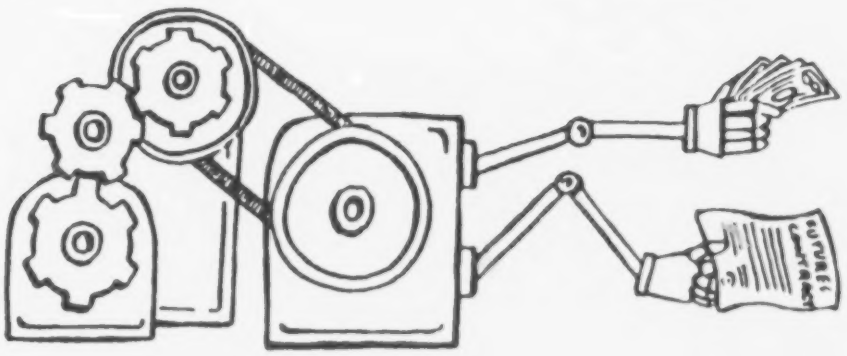
Advantages

1. Price established before harvest
2. Generally, prices higher by hedging
3. Easy to offset
4. Farmer can still deliver grain to the elevator with highest cash price, after offsetting their futures position

Disadvantages

1. Margin deposit and margin call
2. Lock-out excess profits
3. Study, knowledge and time required

THE MECHANICS OF BUYING AND SELLING A FUTURES CONTRACT



FUTURES

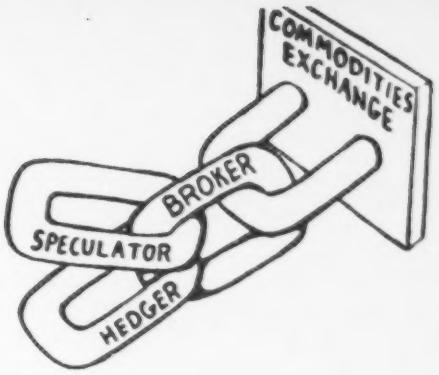
1. The buying and selling of a futures contract

2. Brokers and Available Service

3. Commission Fees

4. Margin Money

BROKERS



1. Local or long distance?

2. Should visit several

3. Be able to offer advice on hedging

4. Should have ag background

5. Should be reliable

6. Utilize only one

COMMISSION FEES

(BROKERAGE FEES)

Definition-Your charge for broker's service.

Examples:

Contract	Commission Fee
5,000 bu corn	$60
40,000 lb cattle	$60
30,000 lb hogs	$55

MARGIN MONEY

(GOOD FAITH MONEY)

1. INITIAL MARGIN- Original deposit required when starting hedging process.

2. MINIMUM MARGIN Generally 75 to 90% of the initial margin.

3. MAINTENANCE MARGIN- Same as minimum margin.

4. MARGIN CALL- Call for more money by broker, occurs when account balance falls below the minimum or maintenance margin.

MARKETING AND FUTURES

1. FUTURES CONTRACT- AN AGREEMENT BETWEEN TWO PARTIES TO BUY OR SELL AT SOME SPECIFIED TIME IN THE FUTURE.

2. BASIS- DIFFERENCE BETWEEN CASH PRICE AND FUTURES CONTRACT PRICE.

3. BULL MARKET- SHORT SUPPLIES AND/OR GOOD DEMAND CAUSES PRICES TO RISE.

4. BEAR MARKET- LARGE SUPPLIES AND/OR POOR DEMAND CAUSES PRICES TO DECLINE.

5. BROKER- EXECUTES FUTURES TRADING ORDERS.

6. DELIVERY MONTH- WHEN A FUTURES CONTRACT MATURES.

7. HEDGING- PROTECTING ONESELF AGAINST CHANGES IN THE LEVEL OF PRICES.

MARKETING AND FUTURES

8. LIMIT- MAXIMUM PRICE ↗ OR ↘ THAT IS PERMITTED ON ONE TRADING SESSION.

9. LONG- PURCHASED FUTURES BUT HAS NOT CLOSED POSITION.

10. MARGIN- MONEY DEPOSITED WITH A BROKER WHEN A FUTURES CONTRACT IS TRADED.

11. MARGIN CALL- RESTORES MARGIN DEPOSITS TO THEIR ORIGINAL POSITION.

12. ROUND TURN- A COMPLETE FUTURES TRADE, OFFSETTING PURCHASE AND SALE.

13. SHORT- SOLD FUTURES BUT HAS NOT YET COMPLETED TRANSACTION.

14. SPECULATOR- TRADES IN FUTURES CONTRACTS BUT DOES NOT USE CASH.

15. STOP-LOSS ORDER- STANDING ORDER TO CLOSE A FUTURES POSITION IF PRICES REACH A CERTAIN LEVEL.

TYPES OF ORDERS

1. Market Orders- most common, sell or buy as the order is received

2. Contingency order- includes specific price and time limits which must be met

3. Market-if-Touched- only filled when futures reach specific price level

4. Time Order- given with price limit order, indicates length of time order is in effect

COMPLETING A HEDGE

1) Call broker and place order

2) Broker calls and gives order

3) Order given to the runner

4) Order is executed

5) Runner brings order to desk

6) Broker calls when order filled

Common Midwestern Corn Diseases

General Diseases

Seed Rot and Seedling Blight
Anthracnose*
Bacterial Top Rot
Common Corn Rust
Common Smut*
Crazy Top
Eyespot*
Gray Leaf Spot
Head Smut
Helminthosporium Leaf Spot
Holcus Leaf Spot
Maize Dwarf Mosaic
Northern Leaf Blight*
Southern Corn Rust
Southern Leaf Blight*
Physoderma Brown Spot
Yellow Leaf Blight

Stalk* and Ear Rots

Anthracnose*
Diplodia Stalk Rot
Fusarium Stalk Rot
Gibberella Stalk Rot
Pythium Stalk Rot
Aspergillus Ear Rot
Diplodia Ear Rot
Fusarium Kernal Rot
Gibberella Ear Rot

Nematodes

* Diseases covered in further detail

Northern Corn Leaf Blight

Cause and Environment

1. Fungus that overwinters in residue
2. Problem in humid areas

Symptoms

1. Lower leaves attacked first
2. Long elliptical lesions
3. Lesions - gray-green to tan
4. May look like frost damage

Damage

1. Yield reduction slight to severe
2. Plants may be killed

Control

1. Plant resistant hybrids
2. Destroy infected residue
3. Chemical control may be too costly

Eyespot

Cause and Environment

1. Fungus that overwinters in residue
2. More common in wet weather

Symptoms

1. Occur on leaves, sheaths and husks
2. Lesions relatively small, circular
3. Young lesions watersoaked, older lesions tan to cream centered surrounded by brown or purple ring
4. More numerous on top leaves

Damage

1. May be some yield loss
2. May be confused with insect damage

Control

1. Plant resistant hybrids
2. Rotate crops
3. Destroy residue

Anthracnose

Cause and Environment

1. Fungus on residue and seed
2. Hot, cloudy weather favors development

Symptoms

1. Leaf spots - young plants, stalk rot - mature plants
2. Lesions small, spindle shaped, tan to reddish brown
3. Firing of affected leaves
4. Black streaks on internodes of stalks

Damage

1. May be slight to severe
2. Stalk lodging

Control

1. Plant resistant hybrids
2. Crop rotation
3. Bury residue,
4. Maintain balanced fertility

Common Smut

Cause and Environment

1. Fungus that overwinters in soil
2. Warm, dry weather, high Π soils

Symptoms

1. Can occur on all above ground plant parts, more severe if plants injured
2. Galls produced, young gray to white
3. Mature galls open to release dark powdery spores

Damage

1. May be some yield loss
2. May occur on any wounded plant part

Control

1. Select somewhat resistant hybrids or varieties
2. Avoid mechanical damage to plant
3. Maintain balanced fertility

Stalk Rots

Cause and Environment

1. Fungi in soil, on residue and seed
2. Development favored when plants are stressed during grain filling or after pollination

Symptoms

1. Wilting or discoloration of leaves
2. Discoloration on outside of stalk
3. Rotting of roots, crown or base of plant

Damage

1. Yield loss may be severe
2. Loss caused by death of leaves
3. Harvest loss due to lodged stalks

Control

1. Plant resistant hybrids
2. Maintain good fertility
3. Do not subject plants to stress

Common Midwestern Soybean Diseases

Diseases of Roots and Stems

Pythium Seed and Seedling Rot
Fusarium Root Rot
Rhizoctonia Root Rot
Phytophthora Root Rot*
Sclerotinia Stem Rot
Stem Canker
Charcoal Rot
Brown Stem Rot*
Anthracnose
Pod and Stem Blight
Soybean Cyst Nematode*
Damping Off*

Foliage and Seed Diseases

Phyllosticta Leaf Spot
Brown Spot
Downy Mildew
Powdery Mildew
Bacterial Blight*
Bacterial Pustule
Bud Blight
Soybean Mosaic
Purple Seed Stain

*Diseases covered in further detail

Bacterial Blight

Cause and Environment

1. Seedborne bacteria
2. Overwinters in residue
3. Develops in cool wet weather

Symptoms

1. Symptoms occur 5 to 7 days after storm
2. Start as small watersoaked spots older lesions turn reddish brown to black
3. Leaf takes on ragged appearance
4. Spotting may occur on stem, petioles, and pods also

Damage

1. Leaf drop
2. Yield reductions light to moderate

Control

1. Plant disease free seed
2. Rotate Crops
3. Do not cultivate when plants are wet and destroy residue
4. Destroy or bury residue

Damping off

Cause and Environment

1. Fungi found in soils
2. Survives with or without residue
3. Disease favored by cold wet soil

Symptoms

1. Symptoms may occur at any time, but more likely early in season
2. Seeds may not germinate
3. Plants affected after emergence may wilt

Damage

1. May be spotty in field or severe in localized areas
2. Yield reductions slight to heavy

Control

1. Use seed protectant fungicide
2. Plant high quality seeds
3. Plant at proper depth
4. Follow cultural practices for good seedbed preparation

Phytophthora

Cause and Environment

1. Fungi found in soil
2. Survives from season to season in soils and on buried residue

Symptoms

1. May occur at any time during growing season
2. Yellowing followed by wilting and eventually death of the plant
3. Brown discoloration of stem of older plants

Damage

1. Common in low poorly drained areas
2. Yield reduction may be severe

Control

1. Plant resistant varieties
2. Follow good cultural practices
3. Use appropriate seed or soil fungicide treatments

Brown Stem Rot

Cause and Environment

1. Caused by fungus
2. Survives within infected residue and in soil

Symptoms

1. May show wilting and interveinal browning of leaves
2. Leaf symptoms not good diagnostic feature
3. Stems show browning of vascular and pith tissues initially at nodes but eventually throughout
4. Premature death resembles frost damage

Damage

1. Yield reductions not easily detected
2. 80 to 90% fields infested, but field level may vary from very low to very high

Control

1. Crop rotation
2. Plant resistant varieties
3. Let infected residue decompose

Soybean Cyst Nematode

Cause and Environment

1. Parasitic roundworm or nematode
2. Survives as eggs
3. Damages roots

Symptoms

1. Plants may be stunted and chlorotic

Damage

1. Plants may be stunted and yellow
2. Damage more severe on stressed plants

Control

1. Resistant varieties
2. Use sanitation
3. Crop rotation

Principles of Plant Disease Control

1. Exclusion of pathogens

2. Eradication of pathogens

3. Reduction of pathogens

4. Protection of host

5. Prevention of disease

Means of Controlling Plant Diseases

1. Regulatory

2. Cultural

3. Biological

4. Physical

5. Chemical

Pesticides used in Controlling Plant Diseases

1. Fungicides

2. Bactericides

3. Antibiotics

4. Nematicides

5. Soil Fumigants

6. Disinfectants

Fungicide - a compound which kills or inhibits the growth of fungi

Protective Fungicide - provides protection against infection only at the site of infection

Systemic Fungicide - can prevent the development of disease on regions of the plant away from the site of application

Eradicant Fungicide - cures an established infection at the site of infection

Methods of Fungicide Application

1. Foliar treatments

2. Soil treatments

3. Seed treatments

4. Postharvest treatments

5. Disinfection

6. Fungigation

7. Injections

Considerations when Applying Pesticides for Plant Disease Control

1. What to apply?

2. When to apply?

3. How much to apply?

4. How to apply?

Types of Fungicides

1. Inorganic Fungicides
    a. Sulfur
    b. Bordeaux mixture
    c. Mercury
2. Organic Fungicides
    a. Dithiocarbamates
    b. Captan
3. Systemic Fungicides
    a. Benomyl
    b. Carboxin
    c. Metalaxyl
4. Sterol Inhibitors

Chemical Application Strategies

Objectives

1. Distinguish between the different methods of chemical application.
2. Know the advantages and disadvantages of each type.
3. Discuss soil factors which affect chemical effectivenes.
4. Be familiar with the cultural practices used for each application.

Masters

1. Types of applications.
2. Preplant incorporated features.
3. Preemergence features.
4. Postemergence features.
5. Tillage equipment that can be used.
6. Soil factors that affect chemicals.
7. Advantages of soil applied chemicals.
8. Advantages of foliar applied chemicals..

Activities and Interest Approach

1. Dependent of available facilities
2. Visit to chemical demonstration plots

Teaching procedures

1. Introduce with an illustration of chemical damage caused by improper chemical application.
2. Follow this up with an illustration of weed or insect infestation caused also by improper chemical application.
3. Discussion of the factors affecting application choice.
4. Discussion of each type of application, use preplant vs preemerge vs postemerge, soil vs foliar.

References

IPM 1 Integrated Pest Management: What Is It?
IPM 21 Integrated Pest Management Firms in Iowa
IPM 22 IPM Decision Management Guide
IPM 24 Crop Pest Monitering Field Guides
IPM 32 A Guide to IPM Publications and Services

Pm 617 Pesticide Calibration - An Easier Way
Pm 817 Broadcast Sprayer Application
Pm 817a Broadcast Sprayer Application
Pm 935 Restricted Use Pesticides

Corn and Soybean Disease Identification and Control

Objectives

1. Identify important characteristics of corn and soybean diseases.
2. Distinguish the difference between chemical damage and disease problems.
3. Know the possible damage that may occur because of the disease.
3. Know the cultural practices available to control most diseases.

Materials needed

1. Growth area for plants (pots or greenhouse).
2. Chemicals to simulate chemical damage.

Masters

1. Common Midwestern Corn Diseases
2. Five major corn diseases
   a. Cause, symptoms, damage, and control for Anthracnose, Eyespot, Northern Leaf Blight, Common Smut, and Stalk Rots
3. Common Midwestern Soybean Diseases
4. Five major soybean diseases
   a. Cause, symptoms, damage, and control for Phytophthora Root Rot, Brown Stem Rot, Damping Off, Soybean Cyst Nematode, and Bacterial Blight
5. Types of fungicides
6. Considerations when applying pesticides for plant disease control
7. Definitions
8. Methods of fungicide application
9. Types of pesticides used
10. Means of controlling plant diseases
11. Principles of plant disease control

Activities

1. Have students plant crops, inoculate and observe reactions from a given unknown either chemical or disease.
2. Have students observe and record changes in the plant.

3. Plan and conduct field studies to build a collection of leaves with disease symptoms.

Teaching procedures

1. Begin early by instructing students as how to plant the crop.
2. Instruct the students to observe their crops and to determine when to begin watching for symptoms.
3. When damage begins to occur, instruct the students as to how to avoid such problems in the future.

References

IPM 1 Integrated Pest Management : What Is It?
IPM 21 Integrated Pest Management Firms in Iowa
IPM 22 IPM Decision Management Guide
IPM 24 Crop Pest Monitering Field Guides
IPM 32 A Guide to IPM Publications and Services
Pm 301 Corn Stalk Rots in Iowa
Pm 617 Pesticide Calibration - An Easier Way
Pm 817 Broadcast Sprayer Application
Pm 817a Broadcast Sprayer Application
Pm 826 Iowa Soybean Disease Management Guide
Pm 836 Fungicides and Nematicides for Agronomic Crops
Pm 890 Brown Stem Rot of Soybeans
Pm 914 Phytophtora Root and Stem Rot of Soybeans
Pm 935 Restricted Use Pesticides
Pm 936 Damping Off in Soybeans
Pm 963 Eyespot of Corn
Pm 1096 Controlling Corn Diseases in Conservation Tillage

Types of applications

1. Preplant incorporated

2. Preemergence

3. Postemergence

Preplant Incorporated

1. Soil applied

2. Before crop is planted

3. Incorporated

4. Follow-up tillage

Preemergence

1. Soil applied

2. Before crop emergence

3. As soon as possible

4. Excessive residue

5. Rainfall

Postemergence

1. Foliar applied

2. After crop emerged

3. Weed growth

4. Cultivation

5. Rescue treatment

6. Climatic factors

Tillage equipment

1. Disk

2. Chisel plow

3. Rotary tillage

4. Field cultivator

Soil Parameters

1. Texture

2. Organic matter

3. pH

Advantages of foliar applied

1. Water activated

2. Soil parameters

3. Seed injury

4. Perennial control

Advantages of soil applied

1. More consistent

2. Competition minimized

3. Cultivation

4. Drift

CUTWORM IDENTIFICATION, SCOUTING, AND TREATMENT RECOMMENDATIONS

I. INTRODUCTION

Cutworms do not reach economic damage levels on a yearly basis. In order of importance to the corn crop, they probably rank third behind European Corn Borer and Rootworms. However, in years when cutworms do attack on a economic scale, fields can be severely damaged or even destroyed within 2 weeks. Cutworms are presented first in this instructional guide because they are the first common corn pest normally observed in the spring. The Extension Video Tape #75208 provides a good introduction to cutworms.

II. OBJECTIVES : Upon completion of this unit students will:

A. Understand the life cycle of the black cutworm, and be able to determine at what stages this pest is a threat to corn.

B. Be able to predict the date of cutting damage after the first significant moth flight has occurred.

C. Demonstrate the proper procedures for cutworm scouting, and identify what areas in a field may have the highest damage.

D. Identify the black cutworm, and differentiate from the dingy cutworm, which is usually not an economic threat.

E. Collect the information needed on the IPM Corn Pest Monitoring Form for determination of economic damage.

F. Determine the economic damage level of present black cutworm population with the use of actual (or simulated) data.

G. Calculate if replanting is needed, or when to resume scouting.

H. Be aware of crop management practices to reduce potential cutworm damage.

III. MATERIALS NEEDED:

A. Classroom
   1) Overhead projector and screen
   2) Blank transparency masters and marking pens
   3) Transparency masters produced from this guide
   4) Video tape player and TV
   5) Extension Video Tape #75208 - Scouting for black cutworms
   6) Adequate copies of student materials listed below
   7) Optional - Preserved cutworm specimens
   8) Optional - Slide projector and slides of cutworm damage
   9) Optional - Any computer and Modem with an account to ISU's Extension Network (EXNET)

B. Field
   1) Apron to hold supplies
   2) Soil thermometer
   3) 4X Magnifier
   4) Small trowel and/or pocket knife
   5) Test tube with vented lid
   6) 2 Stakes with 17'6" of twine (30" rows)
   7) Clip board with ID info and reporting forms

IV. VISUAL MASTERS AND INSTRUCTORS REFERENCE

A. VM-1 Life Cycle of a Moth
B. VM-2 Scouting Schedule for Corn Pest
C. VM-3 Degree Day Calculation Formula
D. VM-4 Sample Field
E. VM-5 Stage V5 Corn Plant
F. VM-6 Crop Growth Stages
G. VM-7 Computer option - EXNET Input/Output Form
H. VM-8 Computer option - Township Tier and Range Map
I. IR-1 Life Cycle of Black Cutworm
J. IR-2 Life Cycle of Dingy Cutworm
K. IR-3 Completed Scouting Schedule for Corn Pest
L. IR-4 Samples for Degree Day Calculations
M. IR-5 Degree Day Answer Key for ACT-1: Cutworms
N. IR-6 Pattern for Scouting a Field
O. IR-7 Probable Damage Areas for Cutworms Answer Key
P. IR-8 Black vs. Dingy Cutting Damage for VM-5
Q. IR-9 Answer Key for Crop Growth Stages
R. IR-10 Sample Data for Treatment Recommendations: Cutworms

V. STUDENT REFERENCE SHEETS, ACTIVITY SHEETS, AND COURSE MATERIALS

A. Pages 17-21 from ISU IPM Decision Guide (IPM-22)
B. Managing Cutworms in Corn (Pm-887)
C. Field Crop Insect Stages (Pm-953)
D. Insecticide Recommendations for 1987 Corn Production (IC-404)
E. Replanting or Late Planting Decisions, Corn & Soybeans (Pm-1155)
F. SR-1 1986 High and Low Temperature for Ames, Iowa
G. SR-2 EXNET Input Form and Instructions
H. ACT-1 Calculation Sheet for Degree Days
I. ACT-2 Probable Areas of Cutworm Damage
J. ACT-3 Calculation of Treatment Recommendations: Cutworms

VI. OPTIONAL ACTIVITY

Make a trip to a nearby corn field, shortly after 300 degree days have accumulated since first significant moth flight.

VII. INTEREST APPROACH: To be determined by the instructor

VIII. TEACHING PROCEDURES

A. LIFE CYCLE

Go over the life cycle of cutworm starting with moth flight in spring, egg laying, larva hatch, feeding and cutting, pupation, and new moth emergence. VM-1 "Life Cycle of a Moth" should be filled out to correspond to IR-1 and IR-2 "Life cycle of Black and Dingy Cutworms". Explain how Black cutworm cycle continues till fall, but cutting damage only occurs once the larvae reach instar four (before they are too small to eat into the cornstalk), and stops when the corn reaches the V7 growth stage (because the stalk becomes too tough to chew into for larvae of any size). Cutting damage usually occurs in a time span between mid May through mid June. VM-2 is a blank "Scouting Schedule for Corn Pest", and can be filled out to correspond to IR-3 "Completed Scouting Schedule for Corn Pest". Note how black cutworms fly in from the south in the spring and lay eggs, compared to other types of cutworms (dingy) of lesser economic threat, who overwinter in Iowa. This often causes reports of early cutworms not considered an economic threat. The background information on lifecycles can be found in the listed publications. Mention the use of pheromone traps to collect adult moths, and that 300 degree days-base 50, are required from egg laying to 4th instar (1st stage for cutting).

B. DEGREE DAY CALCULATIONS

Use VM-3 to explain the calculation of degree days. Examples can be found on IR-4 "Samples for Degree Day Calculations". Cutworms develop on a base 50 degree day. Have students refer to SR-1 "1986 High and Low Temperature for Ames, Iowa" (you may want to develop data for your specific area). Tell students that a significant number of moths (8 or more in a two night period) were collected on May 7. The students need to know how to calculate the day first cutting damage would occur. Clean VM-3, and fill out the bottom with the help of the students, for the first two days of data needed in this example. The students should fill out Activity sheet ACT-1 "Calculation Sheet for Degree Days" as you do the calculations. They should complete the remaining days until an accumulation of 300 degree days is reached since the first significant moth flight occurred. This is the first day cutting damage can be observed in the field.

C. SCOUTING TECHNIQUES

1) GENERAL

Reliability of scouting information depends on how samples were collected. General information on the number of observations, and other pertinent information can be found in the IPM Decision Guide. The section on cutworms is located on the bottom of page 18. A full season Corn Pest Monitoring Form is located on pages 11 and 12.

2) SCOUTING PATTERNS

There is an overall pattern to follow on all IPM scouting, and some additional modifications to be made for each particular pest. Fields should be divided into areas of 40 acres or less, depending on size. The pattern used to "walk" the field is designed to get a representation of conditions for the entire field. An example of a simple pattern is found on the front of IC-442 "Monitoring Rootworm Beetles". A more elaborate pattern is displayed in the Instructor Reference IR-6 "Pattern for Scouting a Field". Patterns should be adjusted to field shape, and time allowed for scouting activities. Instructors should draw several patterns on blank transparency masters to show the students different methods for various field sizes and shapes.

3) CONSIDERATIONS FOR CUTWORMS

Cutworm moths have some habits for egg laying that need special mention. Larvae that hatch in or near weeds have the highest survival rate. Low lying, poorly drained areas subject to flooding, are ideal for weed growth. If a strong breeze or wind occurs during moth flight, likely damage areas are hillsides out of the wind currents. This is due to moths dropping over a hill to get out of the wind for egg laying. Areas near trees may also have less wind currents. The students should shade in areas of ACT-2 "Probable Areas of Cutworm Damage" from the information the instructor has mentioned. VM-3 "Sample Field" corresponds to ACT-2. The instructor should shade in the appropriate areas so students can check their results. The most likely areas of damage are contained on the Instructors reference IR-7 "Probable Damage Areas for Cutworms Answer Key".

4) DETECTING THE DAMAGE

Damage occurs as the growing point of the corn plant is cut, and the plant need not be entirely cut off to cause eventual death. VM-5 "Stage V5 Corn Plant" should be filled out to correspond to IR-8 "Black vs. Dingy Cutting Damage", showing the relationship in the types of damage caused by these cutworms. Black cutworm larvae usually cut at or below the ground surface. Dingy cutworm larvae cut slightly above the ground surface. The first damage a producer usually notices is a wilted plant. Some plants may be entirely cut off in one night. Later the damage is noticed as a dead plant, either standing in, or lying between the rows. Even later the plant has all but disappeared. A slide set of damage at various stages would be useful if a field trip could not be conducted.

5) LOCATING LARVAE

Cutworms do their cutting at night, and burrow deeper into the ground in the daytime if field conditions are dry, and soil temperatures are warm. The best time to locate cutworms is early in the morning, between 7:00 and 10:00 AM. Larvae are usually found adjacent to cut or wilted plants. Using a trowel or a pocket knife, slowly loosen and remove dirt from near the plant roots. Most larvae can be found within 6" around the plant, and at a depth of 1"-2". If the conditions are warm and dry, further digging may be needed. If no larvae are found near the cut plant, try several plants on each side. If larvae are still not found, proceed to another cut plant and resume the search. Five larvae should be located in a scouting area to determine average instar size, which is needed for making a treatment recommendation.

D. IDENTIFICATION AND SIZING

Black cutworms are usually the only type to cause economic damage to corn in Iowa. Different species, and their descriptions are included in both the cutworm section of the IPM Decision Guide (pages 17-21), and the publication PM-887 "Managing Cutworms in Corn". Dingy cutworms are often confused with black cutworms, and both references listed above provide adequate descriptions for identification. Collection of cutworm specimens by the instructor, to be preserved and used the following year, would greatly aid in student learning. Use a test tube with a vented lid for collection. A rubber stopper with a SMALL hole in it works well. The publication PM-953 "Field Crop Insect Stages" contains background information and directions for use of the head capsule gauge (which is also located on page 19 of the IPM Decision Guide), and should be provided to the students. This makes a nice reference to carry in the field during scouting. A laminated version of this publication, which can be reused, is also available for $1.25, as they seem to get messy after trying to place larvae on the sheet for sizing. Note the brackets around instars 4 through 7. This is the stage which cutworm do their economic damage, as mentioned before under life cycles.

E. INFORMATION REQUIRED FOR TREATMENT RECOMMENDATIONS

Information needed for making a treatment recommendation on cutworm damage is listed below. Tables, hand held calculator programs, programs for the Apple /// computer, and the on-line computing facilities of ISU's EXNET system are all possibile ways to make recommendations. Our main emphasis will be on the tables, since access to a modem and EXNET may not be readily available, for either the instructors, or the students at a later date.

1) TABLE BASED DECISIONS
The following information will be needed if the students will be making their recommendations from the tables included in the publications. Even if a computer is available, students should be familiar with using the tables, since that may be the only method of making a recommendation on their own farm. The students may also need to know this procedure for testing.

a) Crop growth stage
b) Plant population
c) % cut or wilted plants
d) Average instar size of larvae
e) Soil temperature
f) Soil moisture conditions

2) THE EXNET ANSWERBACK SYSTEM
A separate visual master VM-7 "EXNET Input/Output Form and Student Reference SR-2 has been developed to collect the information needed for the on-line computing functions of EXNET. Information is listed in the order the computer request it. Instructions on parameters allowable by EXNET, and general information needed to operate the EXNET system is also located on this Student reference.

a) % Cut or wilted plants
b) larvae instar size
c) Township tier
d) Crop stage
e) Potential yield
f) Actual population
g) Desired population
h) Soil Temperature

3) EXPLANATION OF INPUTS FOR EXNET
The student reference sheet SR-2 contains a description of the inputs required for its use. However two of the inputs have associated visual masters. A brief description of their use follows.

a) VM-6 CROP GROWTH STAGE
The crop growth state used by Iowa State differs slightly from the one used by the USDA and most other states. In Iowa, a prefix of V stands for vegetative stage, and a prefix of R stands for reproductive stage. On the vegetative side, VE corresponds to plant emergence. Each leaf adds the corresponding number to the V for vegetative growth. Hence V2 is two leaves, V6 is six leaves, and so on. When the plant reaches tasseling it is at the VT stage. Use with IR-9.

b) VM-8 TOWNSHIP TIER AND RANGE MAP
The on-line computing program for cutworms stores current temperature and scouting information according to latitude in the state. VM-8 shows a township tier and range map that is located in the back of a soil survey. If your county does not have a published soil survey, contact your county extension director, ASCS manager, or SCS manager. EXNET needs to know the tier number found on that map. In the case of Marshall county, locate the city of Melbourne, in the lower left hand corner of the map (it is between map sheet 65 and 66). Melbourne is located in Logan township.

The corresponding tier numbers are located along the left side of the map for the four tiers of townships in Marshall county. Eden, Logan, Jefferson, and Green Castle are all located in Tier 82 North. EXNET NEEDS THE TIER NUMBER ONLY. For this example enter 82 when EXNET ask for tier?.

F. SOIL CONDITIONS FOR TREATMENT

If a treatment looks economically feasible, consult the table located on page 20 of the IPM Decision Guide. It lists the treatment recommendations for different soil conditions. Rescue treatments such as pydrin are sprayed on top of the soil. The larvae must come in contact with the spray to be killed. If the soil is extremely dry no treatment is recommended, since the larvae will stay below ground. Consult the Publication IC-404 for specific recommendations, and possible tillage activities, according to soil conditions.

G. REPLANT DECISIONS

A full description of the considerations before a replant decision are listed in the publication "Replanting or Late Planting Decisions with Corn and Soybeans" (Pm-1155). A brief explanation is listed for the use of table 4 on page 21 of the IPM Decision Guide. This table will be needed with ACT-3 "Calculation of Treatment Recommendations: Cutworms". Students should also be provided current seed, chemical, and machinery cost for this exercise.

H. FINAL TREATMENT RECOMMENDATIONS

Students should fill out the input section of ACT-3 "Calculation of Treatment Recommendations" from some of the sample data found on IR-10 " Sample Data for use with Treatment Recommendations: Cutworms". Each of the different situations should be used, i.e., no treatment necessary, re-scout in two days, treatment recommended, and replant recommended. This will make a good homework assignment, and a possible problem on a test. It also serves as a summary of the information presented on Cutworms.

IX. CROP MANAGEMENT PRACTICES

The highest survival rate of larvae (and the most damage) occurs when weeds are laid in or near green weeds. Destruction of fall weeds will reduce Dingy Cutworm damage. Destruction of spring weeds, prior to Black Cutworm moth flight, will reduce the population (and damage) of Black Cutworms. Chemical or tillage methods can be used to eliminate these weeds.

X. OTHER STUDENT ACTIVITIES AND CLASS DISCUSSION

To be determined by the instructor.

Prepared by Ed Damman, Graduate Assistant
Iowa State University, Ames. April 1987

SR-1

1986 HIGH AND LOW TEMPERATURE FOR AMES IOWA

DATE	HIGH	LOW
Ø1-Mar-86	45	2Ø
Ø2-Mar-86	47	31
Ø3-Mar-86	44	35
Ø4-Mar-86	46	22
Ø5-Mar-86	45	31
Ø6-Mar-86	38	26
Ø7-Mar-86	28	4
Ø8-Mar-86	41	15
Ø9-Mar-86	67	32
1Ø-Mar-86	65	32
11-Mar-86	39	25
12-Mar-86	37	32
13-Mar-86	36	32
14-Mar-86	37	32
15-Mar-86	49	31
16-Mar-86	46	28
17-Mar-86	46	31
18-Mar-86	51	4Ø
19-Mar-86	44	25
2Ø-Mar-86	32	12
21-Mar-86	46	19
22-Mar-86	6Ø	39
23-Mar-86	57	33
24-Mar-86	65	32
25-Mar-86	69	54
26-Mar-86	61	38
27-Mar-86	68	23
28-Mar-86	81	47
29-Mar-86	9Ø	48
3Ø-Mar-86	86	45
31-Mar-86	81	57
Ø1-Apr-86	78	56
Ø2-Apr-86	6Ø	37
Ø3-Apr-86	59	56
Ø4-Apr-86	6Ø	43
Ø5-Apr-86	63	46
Ø6-Apr-86	65	39
Ø7-Apr-86	69	46
Ø8-Apr-86	65	42
Ø9-Apr-86	58	32
1Ø-Apr-86	65	34
11-Apr-86	73	4Ø
12-Apr-86	7Ø	42
13-Apr-86	62	35
14-Apr-86	62	27
15-Apr-86	43	28
16-Apr-86	58	32
17-Apr-86	52	4Ø
18-Apr-86	58	48
19-Apr-86	64	42
22-Apr-86	55	29
23-Apr-86	74	39
24-Apr-86	76	56
25-Apr-86	85	54
26-Apr-86	82	56
27-Apr-86	8Ø	6Ø
28-Apr-86	69	41
29-Apr-86	77	42
3Ø-Apr-86	69	57
Ø1-May-86	67	42
Ø2-May-86	6Ø	31
Ø3-May-86	65	47
Ø4-May-86	79	54
Ø5-May-86	84	6Ø
Ø6-May-86	82	51
Ø7-May-86	79	48
Ø8-May-86	81	6Ø
Ø9-May-86	76	59
1Ø-May-86	75	59
11-May-86	71	58
12-May-86	78	56
13-May-86	77	52
14-May-86	74	47
15-May-86	74	55
16-May-86	66	5Ø
17-May-86	66	47
18-May-86	64	43
19-May-86	67	45
2Ø-May-86	67	43
21-May-86	7Ø	45
22-May-86	71	45
23-May-86	71	5Ø
24-May-86	74	5Ø
25-May-86	77	52
26-May-86	66	52
27-May-86	62	57
28-May-86	7Ø	53
29-May-86	71	59
3Ø-May-86	8Ø	58
31-May-86	85	58
Ø1-Jun-86	85	61
Ø2-Jun-86	79	51
Ø3-Jun-86	82	5Ø
Ø4-Jun-86	83	63
Ø5-Jun-86	72	6Ø
Ø6-Jun-86	72	59
Ø7-Jun-86	79	63
Ø8-Jun-86	81	58
Ø9-Jun-86	81	6Ø
1Ø-Jun-86	87	69

SR-1

1986 HIGH AND LOW TEMPERATURE FOR AMES IOWA

DATE	HIGH	LOW	DATE	HIGH	LOW
20-Apr-86	63	45	11-Jun-86	85	62
21-Apr-86	52	32	12-Jun-86	78	56
13-Jun-86	81	59	23-Jul-86	88	61
14-Jun-86	75	61	24-Jul-86	91	72
15-Jun-86	79	58	25-Jul-86	90	65
16-Jun-86	81	68	26-Jul-86	85	62
17-Jun-86	82	57	27-Jul-86	86	67
18-Jun-86	82	63	28-Jul-86	90	69
19-Jun-86	90	66	29-Jul-86	90	61
20-Jun-86	90	66	30-Jul-86	87	70
21-Jun-86	88	70	31-Jul-86	85	67
22-Jun-86	79	65	01-Aug-86	79	59
23-Jun-86	86	58	02-Aug-86	74	57
24-Jun-86	86	54	03-Aug-86	76	54
25-Jun-86	86	58	04-Aug-86	76	54
26-Jun-86	90	71	05-Aug-86	71	61
27-Jun-86	89	69	06-Aug-86	78	60
28-Jun-86	91	62	07-Aug-86	80	61
29-Jun-86	86	65	08-Aug-86	80	57
30-Jun-86	78	64	09-Aug-86	80	57
01-Jul-86	75	61	10-Aug-86	74	60
02-Jul-86	78	61	11-Aug-86	74	49
03-Jul-86	82	59	12-Aug-86	75	57
04-Jul-86	90	71	13-Aug-86	67	60
05-Jul-86	90	75	14-Aug-86	83	62
06-Jul-86	90	63	15-Aug-86	85	64
07-Jul-86	80	63	16-Aug-86	87	63
08-Jul-86	88	67	17-Aug-86	87	66
09-Jul-86	87	65	18-Aug-86	81	59
10-Jul-86	83	66	19-Aug-86	79	58
11-Jul-86	84	62	20-Aug-86	78	58
12-Jul-86	81	64	21-Aug-86	77	62
13-Jul-86	85	60	22-Aug-86	84	61
14-Jul-86	84	67	23-Aug-86	80	52
15-Jul-86	91	71	24-Aug-86	74	52
16-Jul-86	91	72	25-Aug-86	89	61
17-Jul-86	92	72	26-Aug-86	87	66
18-Jul-86	92	69	27-Aug-86	74	48
19-Jul-86	91	71	28-Aug-86	67	42
20-Jul-86	85	61	29-Aug-86	70	45
21-Jul-86	80	58	30-Aug-86	79	56
22-Jul-86	86	59	31-Aug-86	82	55

ACT-1 Calculation of Degree Days

$$\frac{\text{HIGH TEMP} + \text{LOW TEMP}}{2} = \text{AVERAGE TEMP}$$

AVERAGE - BASE UNIT = __ DD/BASE__

				TOTAL
$\frac{63+45}{2}$	= 54-50 =	4	DD/BASE 50	___4
$\frac{65+49}{2}$	= 57-50 =	7	DD/BASE 50	___7
				=====
				11

$\frac{__+__}{2}$	= __-__ =	__	DD/BASE __	_____
$\frac{__+__}{2}$	= __-__ =	__	DD/BASE __	_____
$\frac{__+__}{2}$	= __-__ =	__	DD/BASE __	_____
$\frac{__+__}{2}$	= __-__ =	__	DD/BASE __	_____
$\frac{__+__}{2}$	= __-__ =	__	DD/BASE __	_____
$\frac{__+__}{2}$	= __-__ =	__	DD/BASE __	_____
$\frac{__+__}{2}$	= __-__ =	__	DD/BASE __	_____

$$\frac{\_\_ + \_\_}{2} = \_\_ - \_\_ = \_\_ \quad \text{DD/BASE} \quad \_\_ \quad \_\_\_\_\_$$

$$\frac{\_\_ + \_\_}{2} = \_\_ - \_\_ = \_\_ \quad \text{DD/BASE} \quad \_\_ \quad \_\_\_\_\_$$

$$\frac{\_\_ + \_\_}{2} = \_\_ - \_\_ = \_\_ \quad \text{DD/BASE} \quad \_\_ \quad \_\_\_\_\_$$

$$\frac{\_\_ + \_\_}{2} = \_\_ - \_\_ = \_\_ \quad \text{DD/BASE} \quad \_\_ \quad \_\_\_\_\_$$

$$\frac{\_\_ + \_\_}{2} = \_\_ - \_\_ = \_\_ \quad \text{DD/BASE} \quad \_\_ \quad \_\_\_\_\_$$

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$$\frac{\_\_ + \_\_}{2} = \_\_ - \_\_ = \_\_ \quad \text{DD/BASE} \quad \_\_ \quad \_\_\_\_\_$$

$$\frac{\_\_ + \_\_}{2} = \_\_ - \_\_ = \_\_ \quad \text{DD/BASE} \quad \_\_ \quad \_\_\_\_\_$$

$$\frac{\_\_ + \_\_}{2} = \_\_ - \_\_ = \_\_ \quad \text{DD/BASE} \quad \_\_ \quad \_\_\_\_\_$$

$$\frac{\_\_ + \_\_}{2} = \_\_ - \_\_ = \_\_ \quad \text{DD/BASE} \quad \_\_ \quad \_\_\_\_\_$$

$$\frac{\_\_ + \_\_}{2} = \_\_ - \_\_ = \_\_ \quad \text{DD/BASE} \quad \_\_ \quad \_\_\_\_\_$$

$$\frac{\_\_ + \_\_}{2} = \_\_ - \_\_ = \_\_ \quad \text{DD/BASE} \quad \_\_ \quad \_\_\_\_\_$$

VM-7 EXNET INPUT/OUTPUT FORM

INPUTS

% CUT OR WILTED PLANTS _____

LARVAE INSTAR STAGE _____

TOWNSHIP TIER LOCATION _____

CROP GROWTH STAGE _____

POTENTIAL YIELD _____

CURRENT POPULATION _____

IDEAL POPULATION _____

SOIL TEMPERATURE _____

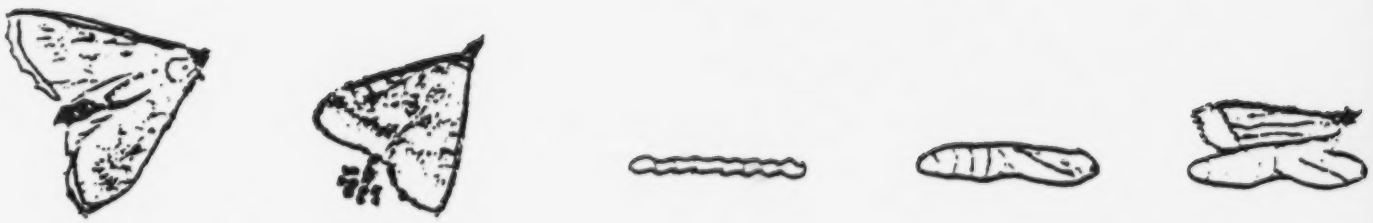
==========

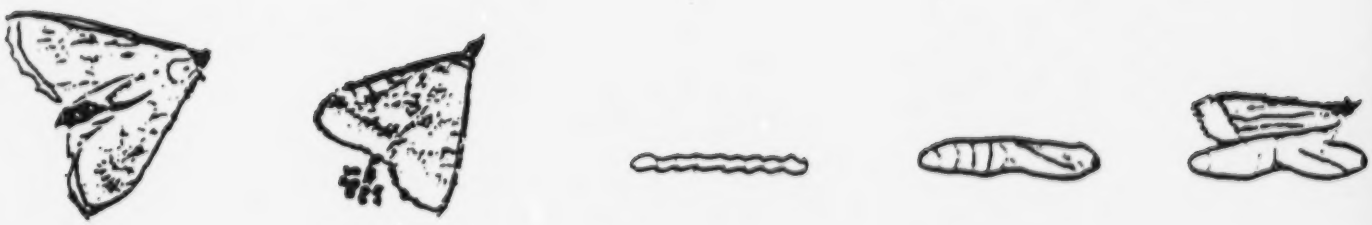
OUTPUTS

YIELD IF TREATED _____

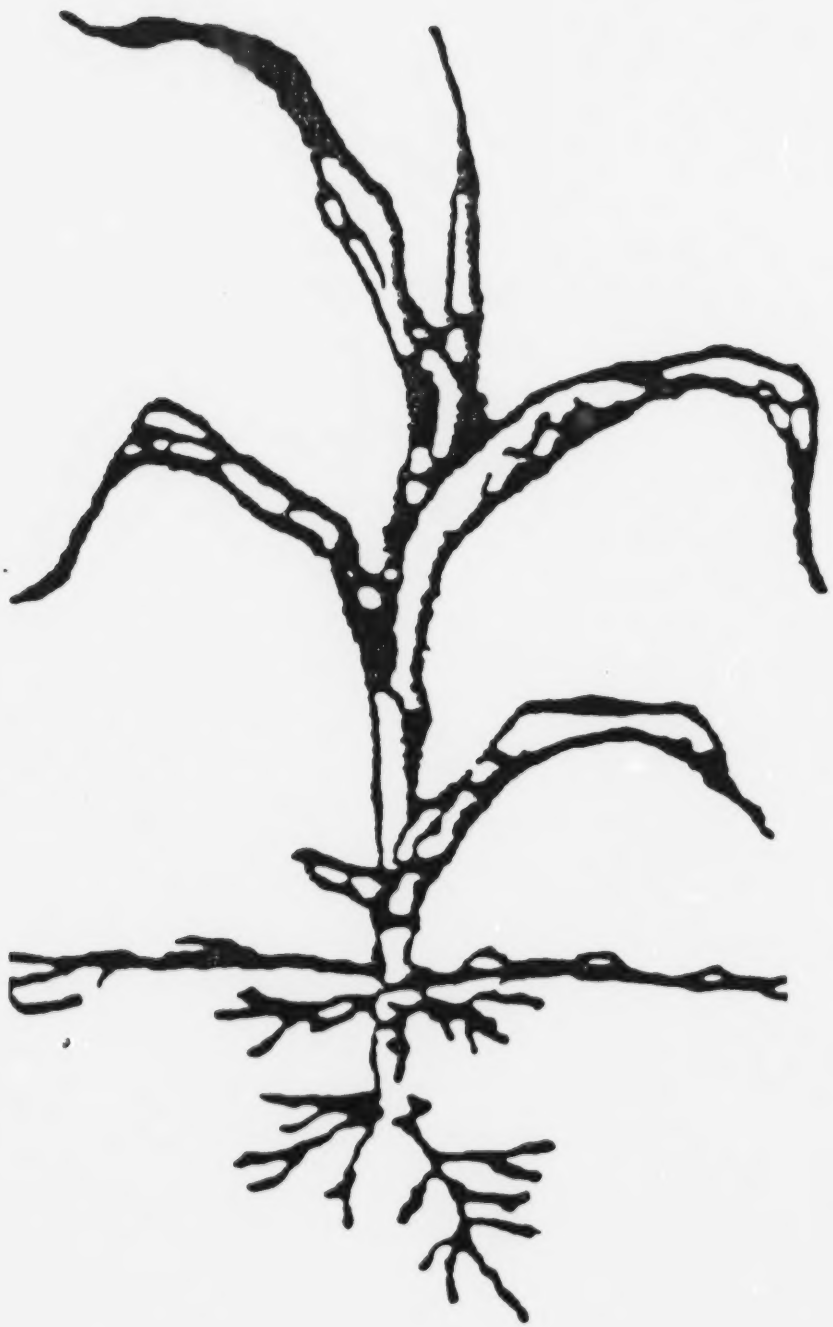
YIELD UNTREATED _____

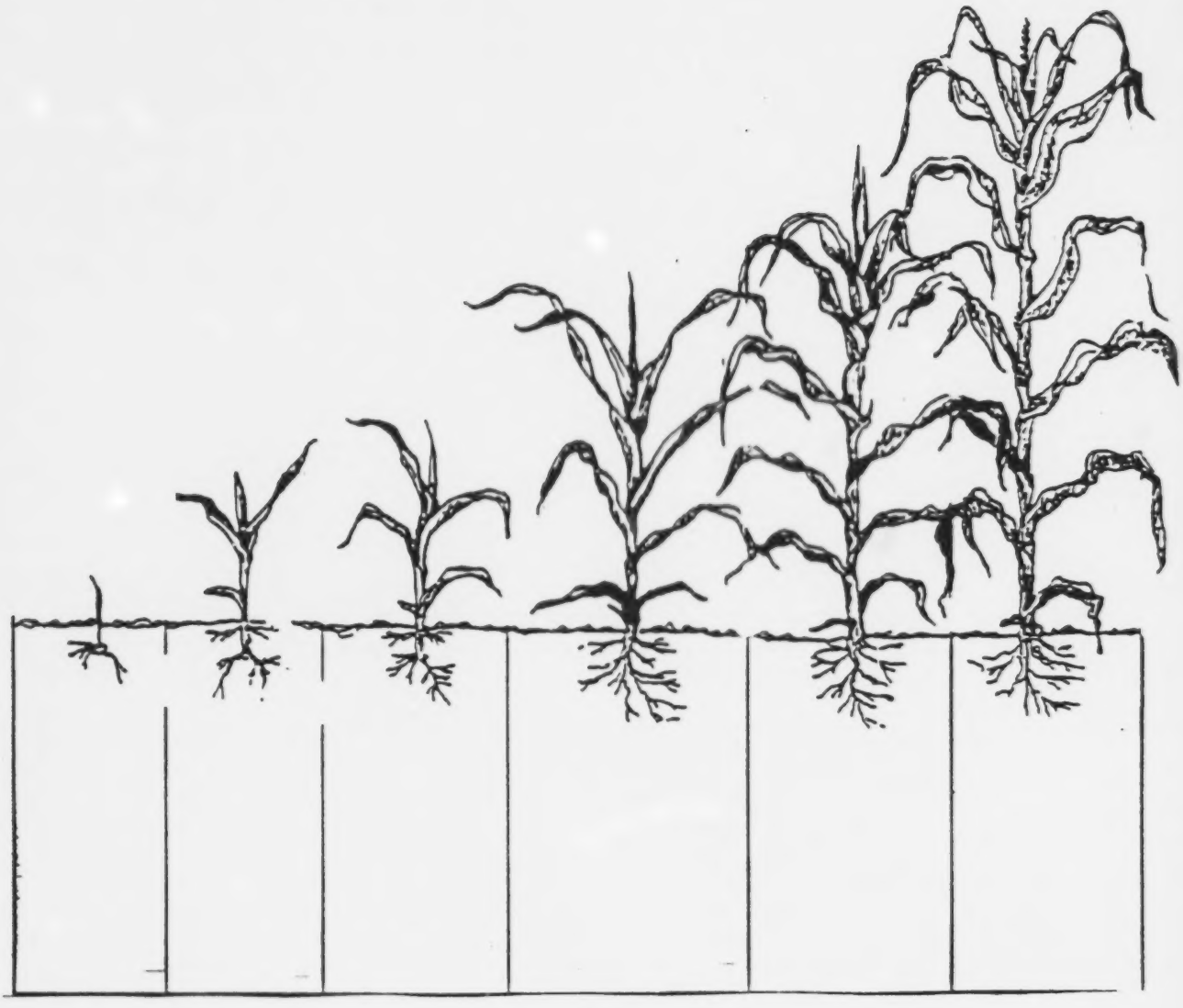
VM-1



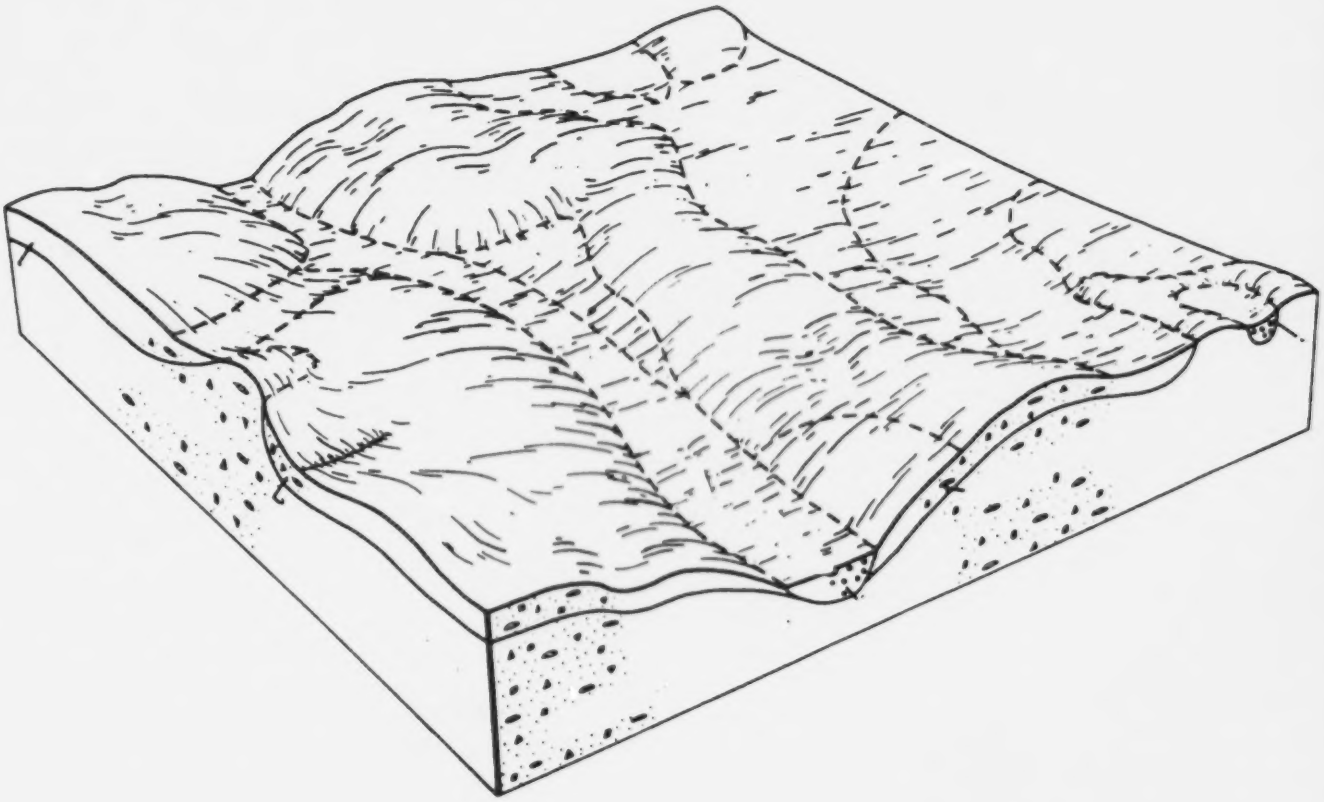


VM-5



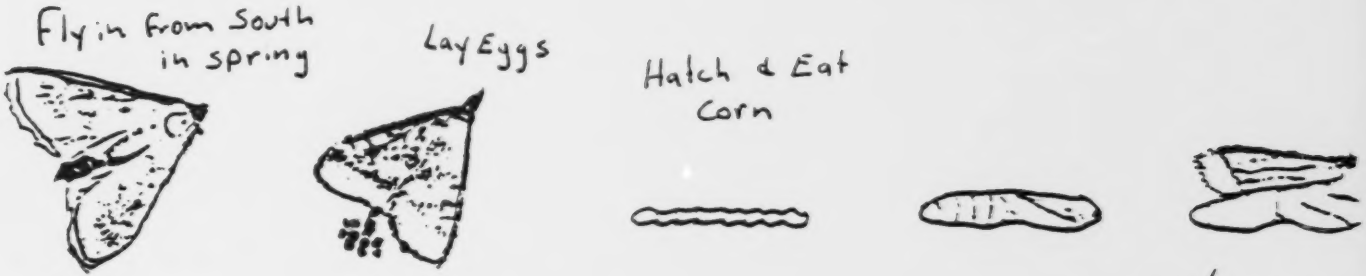


VM-4

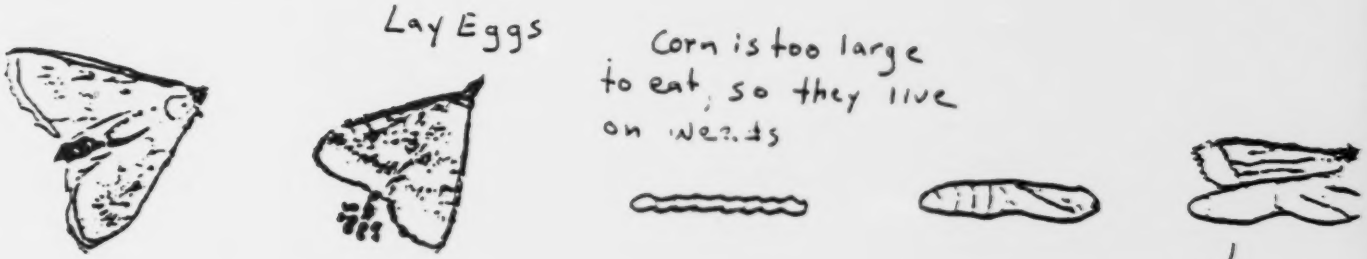


IR-1 LIFE CYCLE OF A BLACK CUTWORM

1st Generation



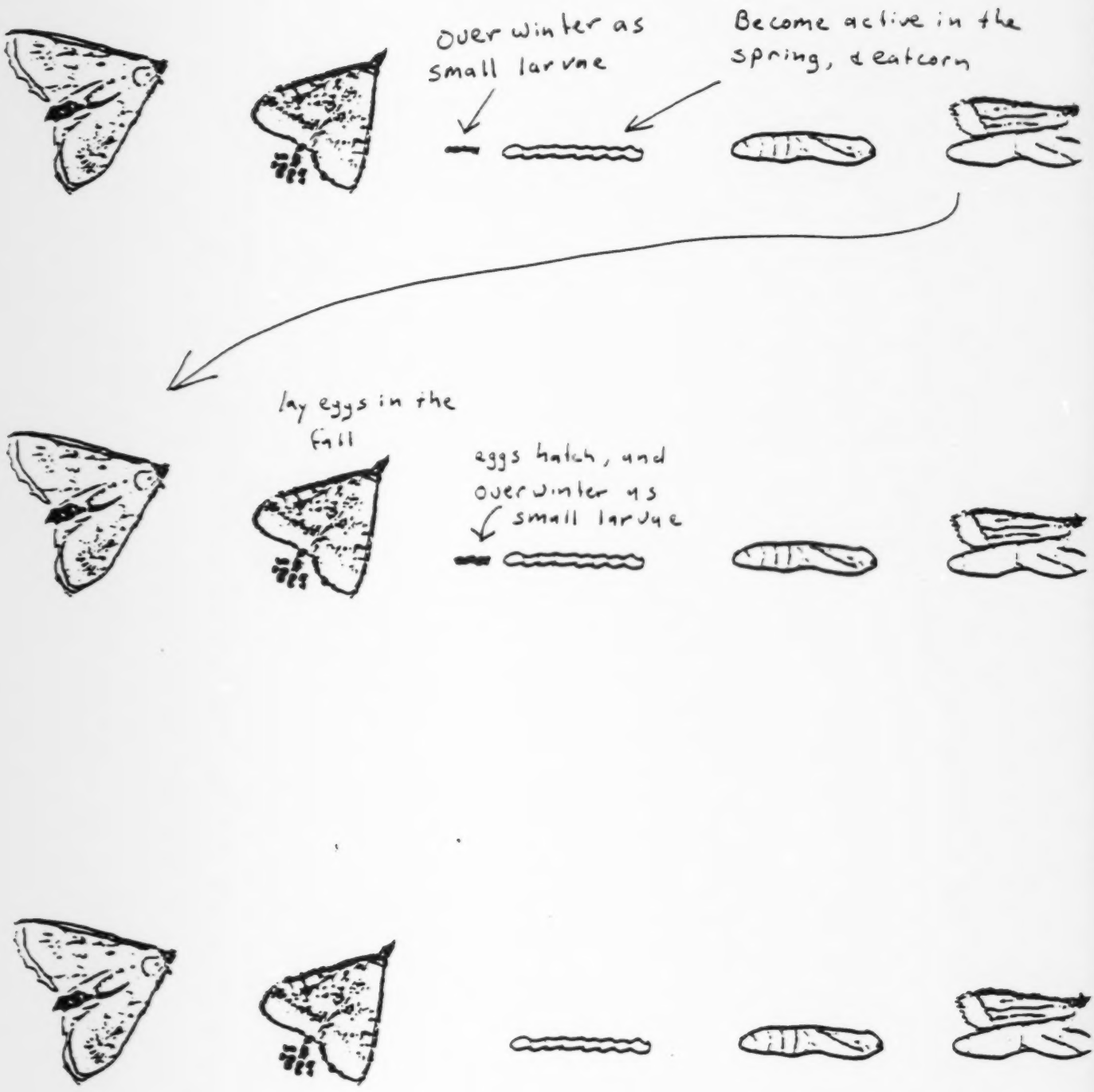
2nd Generation



3rd Generation

Are killed by Frost

IR-2 LIFE CYCLE OF A DINGY CUTWORM


Overwinter as small larvae
Become active in the spring, & eat corn
lay eggs in the fall
eggs hatch, and overwinter as small larvae

IR-4 SAMPLES FOR DEGREE DAY CALCULATIONS

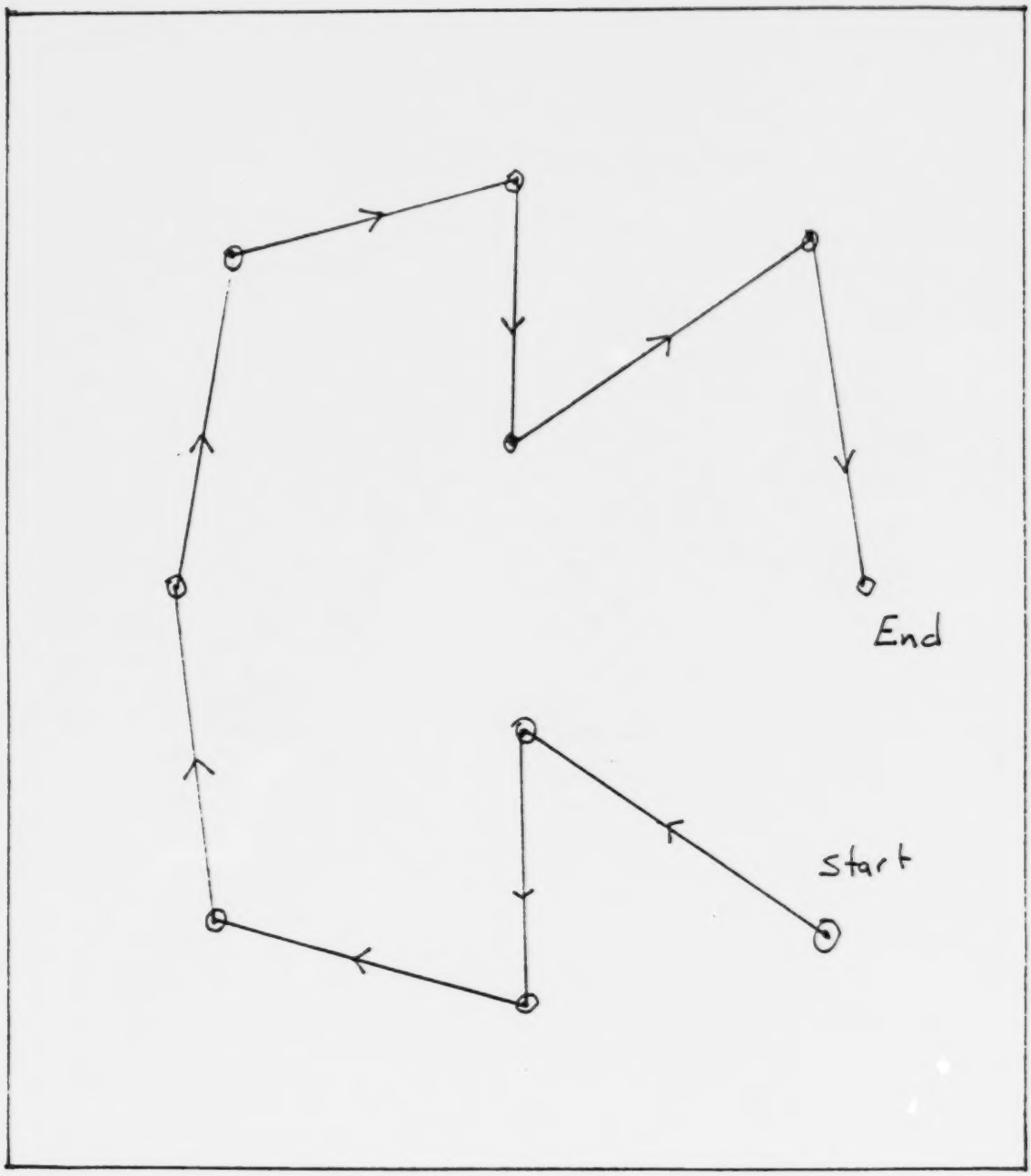
4/21	$\frac{67+43}{2}$	= 55 − 50	= 5	DD/BASE	50	5
4/22	$\frac{55+29}{2}$	= 42 − 50	= 0	DD/BASE	50	5
4/23	$\frac{74+39}{2}$	= 56.5 − 50	= 6.5	DD/BASE	50	11.5
4/24	$\frac{76+56}{2}$	= 66 − 50	= 16	DD/BASE	50	27.5
4/25	$\frac{85+54}{2}$	= 69.5 − 50	= 19.5	DD/BASE	50	47
4/26	$\frac{82+56}{2}$	= 69 − 50	= 19	DD/BASE	50	66

4/19	$\frac{64+42}{2}$	= 53 − 44	= 9	DD/BASE	44	9
4/22	$\frac{55+29}{2}$	= 42 − 44	= 0	DD/BASE	44	9
4/23	$\frac{74+39}{2}$	= 56.5 − 44	= 12.5	DD/BASE	44	21.5
4/24	$\frac{76+56}{2}$	= 66 − 44	= 22	DD/BASE	44	43.5
4/25	$\frac{85+54}{2}$	= 69.5 − 44	= 25.5	DD/BASE	44	69
4/26	$\frac{82+56}{2}$	= 69 − 44	= 25	DD/BASE	44	94

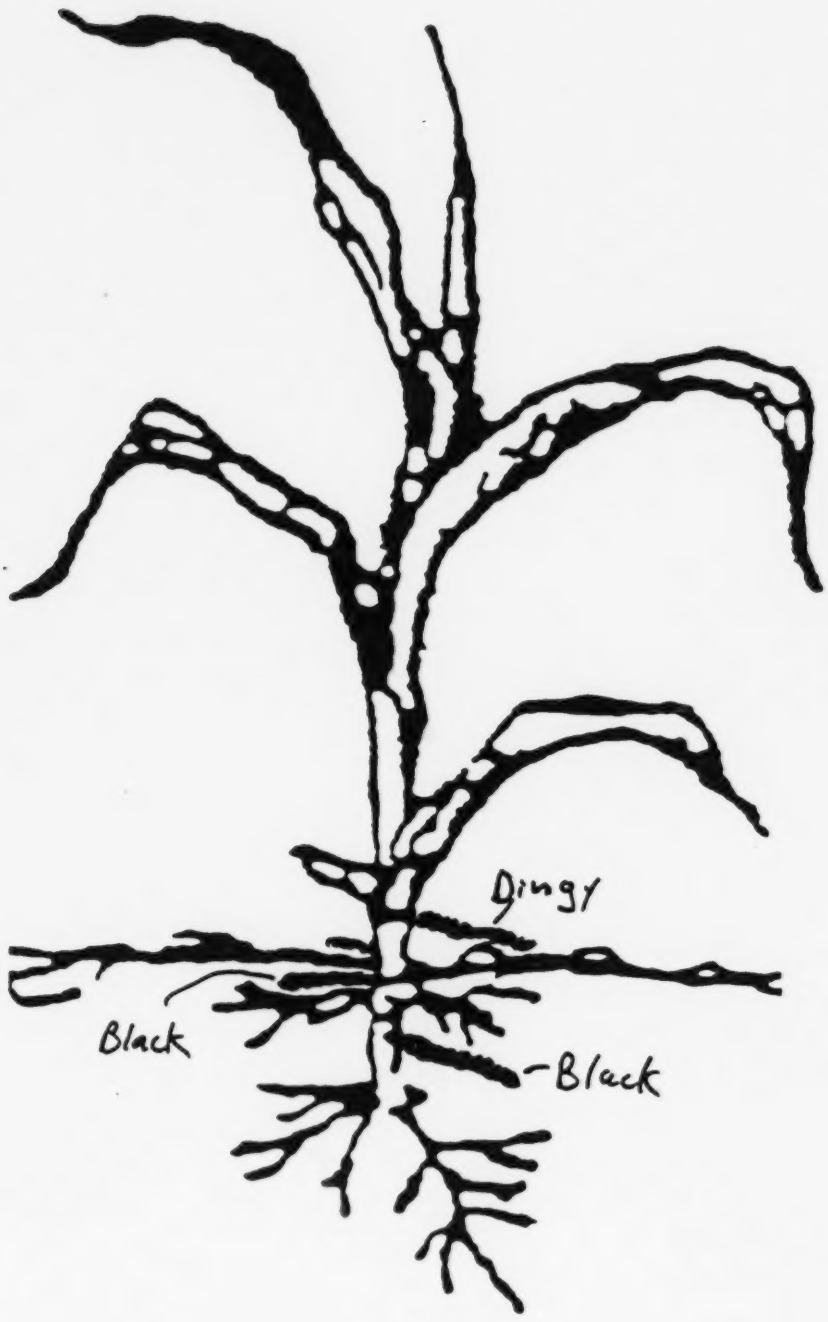
IR-5 DEGREE DAY ANSWER KEY FOR ACT-1: CUTWORMS

DATE	HIGH	LOW	AVE.	- BASE	DD/50	ACCUMULATED
07-May-86	79	48	63.5	50.0	13.5	13.5
08-May-86	81	60	70.5	50.0	20.5	34.0
09-May-86	76	59	67.5	50.0	17.5	51.5
10-May-86	75	59	67.0	50.0	17.0	68.5
11-May-86	71	58	64.5	50.0	14.5	83.0
12-May-86	78	56	67.0	50.0	17.0	100.0
13-May-86	77	52	64.5	50.0	14.5	114.5
14-May-86	74	47	60.5	50.0	10.5	125.0
15-May-86	74	55	64.5	50.0	14.5	139.5
16-May-86	66	50	58.0	50.0	8.0	147.5
17-May-86	66	47	56.5	50.0	6.5	154.0
18-May-86	64	43	53.5	50.0	3.5	157.5
19-May-86	67	45	56.0	50.0	6.0	163.5
20-May-86	67	43	55.0	50.0	5.0	168.5
21-May-86	70	45	57.5	50.0	7.5	176.0
22-May-86	71	45	58.0	50.0	8.0	184.0
23-May-86	71	50	60.5	50.0	10.5	194.5
24-May-86	74	50	62.0	50.0	12.0	206.5
25-May-86	77	52	64.5	50.0	14.5	221.0
26-May-86	66	52	59.0	50.0	9.0	230.0
27-May-86	62	57	59.5	50.0	9.5	239.5
28-May-86	70	53	61.5	50.0	11.5	251.0
29-May-86	71	59	65.0	50.0	15.0	266.0
30-May-86	80	58	69.0	50.0	19.0	285.0
31-May-86	85	58	71.5	50.0	21.5	306.5

IR-6 PATTERN FOR SCOUTING A FIELD



IR-8 BLACK VS. DINGY CUTWORM DAMAGE



VM-2 SCOUTING SCHEDULE FOR CORN PEST

MAY	JUNE	JULY	AUG	SEPT

VM-3 DEGREE DAY CALCULATION FORMULA

$$\frac{\text{HIGH TEMP} + \text{LOW TEMP}}{2} = \text{AVERAGE TEMP}$$

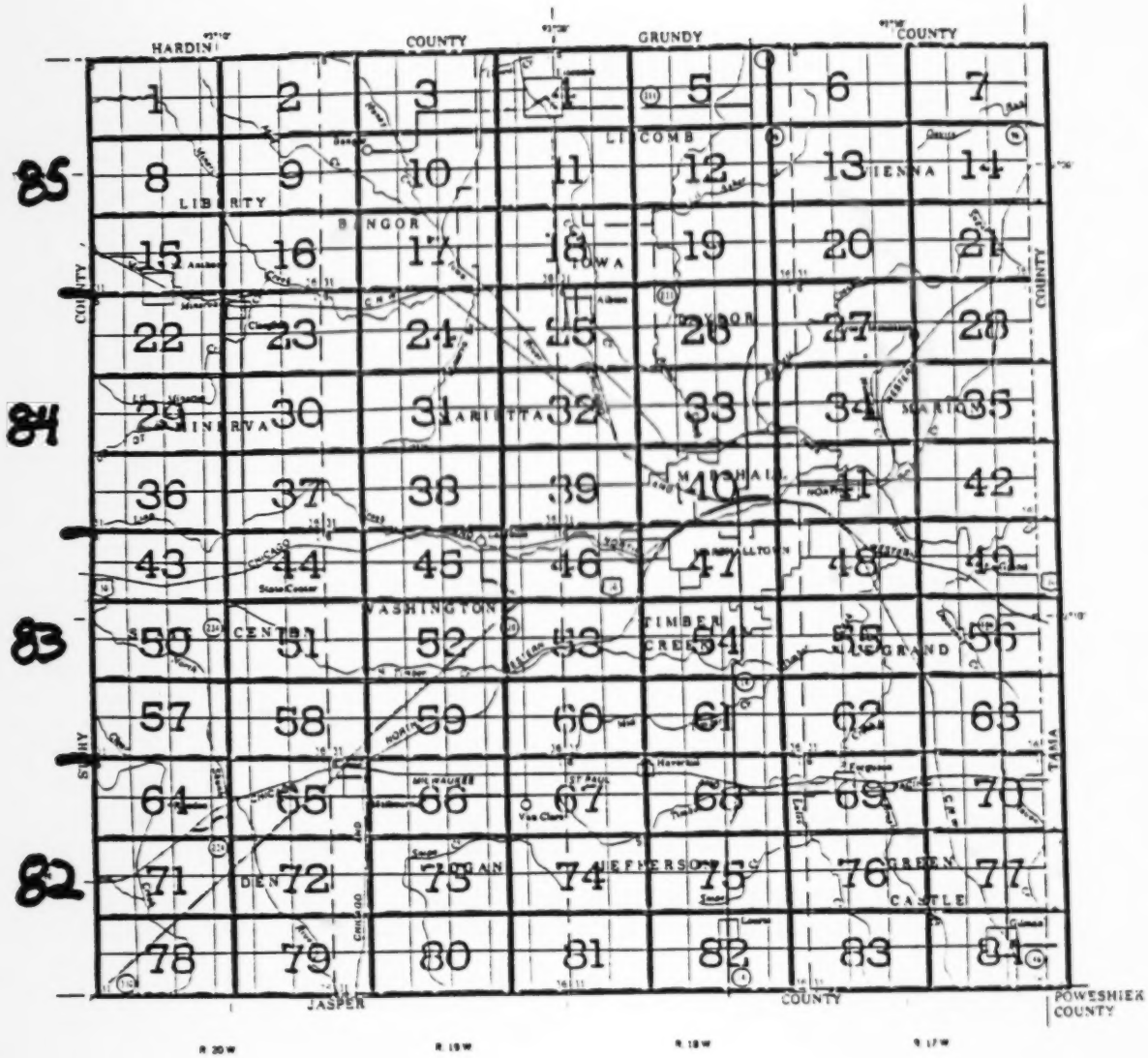
AVERAGE - BASE UNIT=__DD/BASE__

$\frac{63+45}{2} = 54$ 54-50 = 4 DD/BASE 50

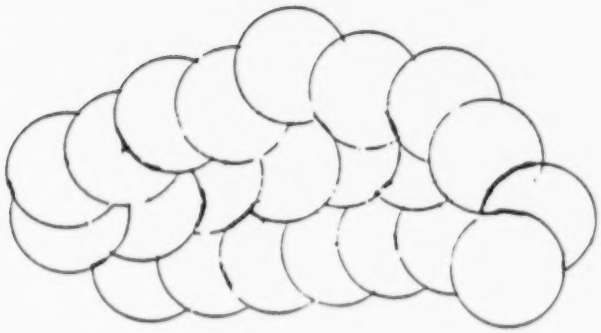
$\frac{\_+\_}{2} = \_$ _-_ = _ DD/BASE _

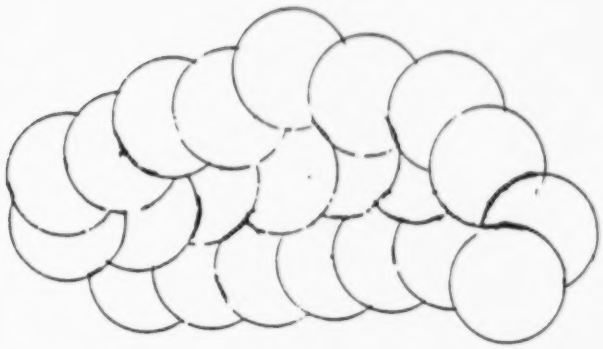
$\frac{\_+\_}{2} = \_$ _-_= _ DD/BASE _

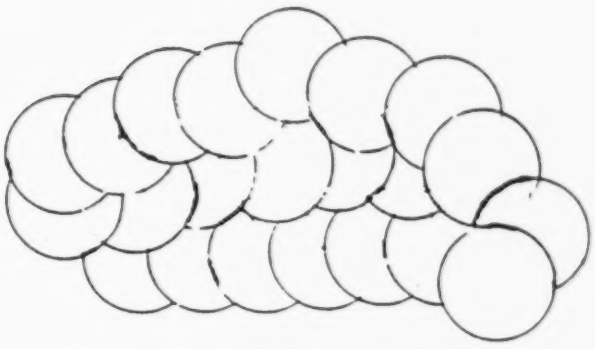
UM-8 TOWNSHIP TIER AND RANGE MAP

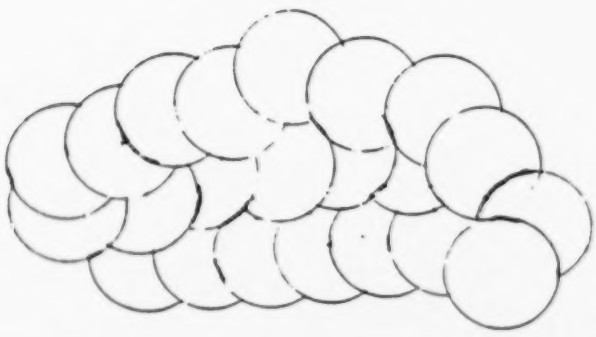


VM-9 STAGES OF EGG MASS DEVELOPMENT

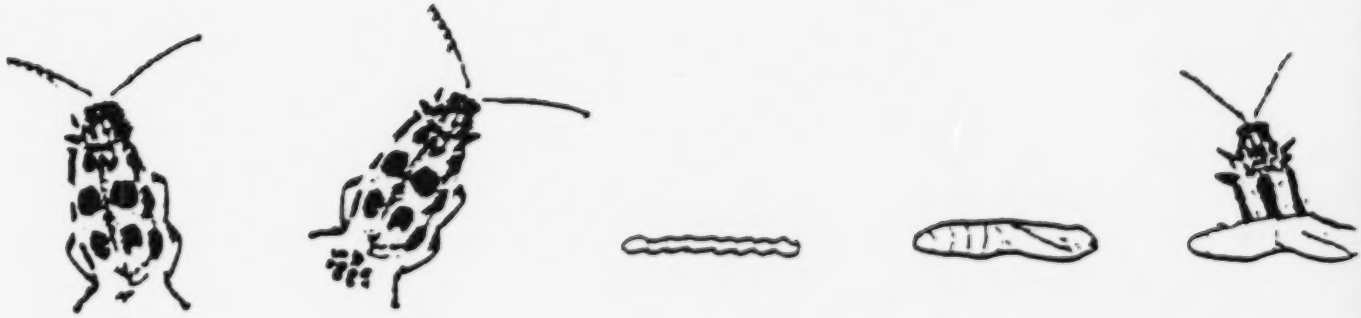








VM-10 LIFE CYCLE OF A BEETLE



SR-2 EXNET INSTRUCTIONS AND INPUT FORM

After you have made connection with EXNET, the following screen appears.

```
Iowa State University
  ExNet (Vax/Unix)
(Enter info for information)

login:
```

Type in your login (account name), in this example the account name is microvan. Exnet will respond with Password:. **Type in the password** that corresponds to your account name. You will not see your password on the screen as you type it in.

```
login:microvan
Password:
Last login: Tue Apr 14 Ø1:39:38 on ttyj7

Welcome to EXNET -- the ISU Extension Service Network.


NOTICE:  Plan of work template can be accessed through EXNET option
         8a2.  It will be accessible until June 15, 1987.


[Enter a <RETURN> to continue]
Terminal type:  unknown
```

Exnet will display its opening screen, containing the last time you were on the system, and messages regarding new information that has been added to the system recently.

You must press the RETURN (or enter) key to display the Main Menu screen.

```
                        EXNET Main Menu

1.      Agriculture                                    (menu)
2.      EXNET User Conferences                         (menu)
3.      Business,Community & Government                (menu)
4.      ISU Information                                (menu)
5.      EXNET Services                                 (menu)
6.      Market & Weather Update                        (menu)
7.      Newsletters                                    (menu)
8.      Extension                                      (menu)

                                                       '?' for help
Enter Main Menu Selection ==>                          '<cntrl>d' to logout
```

Press 5, and then return to select the EXNET Services menu. EXNET will then display the following menu screen.

```
                    5. EXNET Services Menu

A.      Communications <mail,notes,phone>        (menu)

B.      Data Collection                          (menu)

C.      EXNET Tips                               (notes)

D.      ISU Software Distribution                (menu)

E.      Update EXNET Reports                     (utility)

F.      Set Unix Options                         (menu)

G.      Online Computing                         (menu)

                                                 '?' for help
                                                 'q' quit to Main menu

Enter Services Menu Selection ==>
```

Press g, and then return to select the Online Computing Menu. EXNET will then display the following menu screen.

```
                  5.G. Online Computing Menu

1.      Answerback System                        (utility)

2.      Growing Degree Day Calculations          (utility)

3.      Insecticide Recommendations              (utility)

5.      Herbicide Recommendations                (utility)

                                          '?' for help
                                          'q' quit to Services menu

Enter Computing Menu Selection ==>
```

SHORTCUT: If you know the menu selections you need, you can enter them all from the EXNET Main Menu. In this example we have chosen 5 for EXNET services, g for Online Computing, and 1 for Answerback system. **At the Main Menu, you could have entered 5g1 to take you directly to the Answer- back system.** This saves time (AND MONEY) because 2 menus were bypassed.

NOTE: The Menus have alternating numbers and letters, corresponding to how "deep" you are in the menu system.

When you reach the Answer back system the following screen is displayed.

```
              IPM Interactive Answer-backs
                  Iowa State University


  Grower Name :
```

All the programs in the answer back system require two inputs, regardless of which program you actually choose. One is the growers name, which will appear on the summary screen, and the other is the date which is needed to calculate the recommendations. **Type in the growers name and press RETURN.** In this example the growers name is Ed Damman. A line requesting input of date then appears on the screen as shown below.

```
              IPM Interactive Answer-backs
                  Iowa State University

  Grower Name : Ed Damman

   Date :         Ø /Ø /Ø
```

Entering the date is a little misleading. You have to enter the month, date, and year separately. In this example 1985 data will be used so the accumulated degree days (known by EXNET) will reflect an accurate recommendation for the data in this example. The example was prepared in April so 1987 data would not have worked as well. **If this program is being run during cutworm season (May through June), enter the actual date.** If you are using this as an example during some other time of the year, use 1985 dates, because that is the default data kept in the computer for example purposes. After the month is entered, another line with the month already entered appears on the bottom of the screen. In this example June (6) was used for the month.

```
              IPM Interactive Answer-backs
                  Iowa State University

  Grower Name : Ed Damman

  Date :         Ø /Ø /Ø
  Date :         6 /Ø /Ø
```

Enter the day of the month, and press return. In this example the second day of June (2) was used. A third date line with the month and day already appearing is added to the screen.

```
              IPM Interactive Answer-backs
                  Iowa State University

  Grower Name : Ed Damman

  Date :         Ø /Ø /Ø
  Date :         6 /Ø /Ø
  Date :         6 /2 /Ø
```

Enter the year, and press RETURN. The completed date appears on the fourth date line, and the screen scrolls up to display the following menu for selection of crop.

```
            IPM Interactive Answer-backs
                Iowa State University

Grower Name : Ed Damman

Date :          Ø /Ø /Ø
Date :          6 /Ø /Ø
Date :          6 /2 /Ø
Date :          6 /2 /85



                  Interactive Answer-backs

  1.       Corn related Answer-backs

  2.       Soybean related Answer-backs

  3.       Alfalfa related Answer-backs

                                                  '?' for help
                                                  'q' to quit
  Enter selection ==>
```

The cutworm program is located under Corn related Answer-backs. **Press 1. and then RETURN** to display the following menu.

```
                  1. Corn  Answer-backs

  A.       Black Cutworms

  B.       First Generation Corn Borer

  C.       Grasshoppers

  D.       Rootworm Beetles

  E.       Corn Aphids

  F.       Stalk Rot

  G.       Second Generation Corn Borer
                                                  'q' to quit
                                                  '?' for help


  Enter selection ==>
```

NOTE: The ? for help on the preceding menu, and the '<CTRL>C', on the following menu are not active at the present time. These instructions should avoid the need for system help.

The following screen then appears, and is ready for you to enter the data required for EXNET to calculate a recommendation.

```
                    1.A. Cutworm Answer-back

                                                  '<CTRL>C' for help
                                                  '<CTRL>T' to quit

                              -Cutworm Information-

  Percent cut or wilted ? Ø.ØØØØ
```

Enter this number from your actual field observations (Example: 4).

```
  Cutworm Instar          ? Ø.ØØØØ
```

Enter the average instar stage of five larvae found in the field. The chart on Field Crop Insect Stages PM-953) can be used for this. NOTE: This must be a number between 4 and 7, corresponding to the damage stage of the cutworm larvae (Example: 4).

```
  Location (tier)    ? Ø
```

Look at the map sheet index in the back of your soil survey. Each township has a tier and range number. If your tier is T. 82 N. enter the number only (Example: 82).

```
  Crop Stage          ? V1
```

Enter the number corresponding to the growth stage of the corn. The allowable parameters are between VE and V7 (Example: V3).

```
                              -Field Information-

 Potential Yield   ? Ø
```

Enter what would be a potential yield for this corn if adequate moisture is received and no cutting damage had occurred (Example: 150).

```
Actual Plant Pop. ? Ø
```

This value should be from the actual field data (Example: 21ØØØ).

```
Ideal Plant Pop.  ? Ø 26ØØØ
```

If crop was replanted what would be the ideal population (Example: 27500).

```
Soil Temp.        ? Ø.ØØØØ
```

Enter the actual soil temperature (Example 73).

The following screen shows a summary of all the required inputs, with the example values entered.

```
                    1.A. Cutworm Answer-back

                                          '<CTRL>C' for help
                                          '<CTRL>T' to quit

                          -Cutworm Information-


Percent cut or wilted ? Ø.ØØØØ       4.ØØØØ
Cutworm Instar        ? Ø.ØØØØ       4.ØØØØ
Location (tier)   ? Ø 82
Crop Stage        ? V1  V3

                           -Field Information-


Potential Yield   ? Ø 15Ø
Actual Plant Pop. ? Ø 21ØØØ
Ideal Plant Pop.  ? Ø 27500
Soil Temp.        ? Ø.ØØØØ       73.ØØØØ
```

The next screen that will appear are the values if the corn is treated or untreated.

```
IPM Inspect Program.  Version 3.4 (Ø6/13/85)

File #: Interactive                    Date:      Ø6/Ø2/85
Grower: Ed Damman                      Crop:      corn

Black Cutworm losses:
  Yield should be 126.Ø5 bushels per acre if treated.
  Yield should be 1Ø6.96 bushels per acre if untreated.


[Press Return to Continue]
```

After pressing return, the following menu appears

```
                1. Corn  Answer-backs

A.      Black Cutworms

B.      First Generation Corn Borer

C.      Grasshoppers

D.      Rootworm Beetles

E.      Corn Aphids

F.      Stalk Rot

G.      Second Generation Corn Borer
                                                    'q' to quit
                                                    '?' for help
Enter selection ==>
```

You should run some other values to show the students the relationship between the inputs, and treated vs. untreated yields. Some example data, and the results are contained at the end of this manual. To reenter the cutworm program press a and then RETURN.

If you wish to end the session press q and then RETURN. The following menu will appear.

```
                Interactive Answer-backs

1.      Corn related Answer-backs

2.      Soybean related Answer-backs

3.      Alfalfa related Answer-backs

                                                    '?' for help
                                                    'q' to quit
Enter selection ==>
```

Press q and RETURN for the Online computing menu.

```
                    5.G. Online Computing Menu

1.      Answerback System                          (utility)

2.      Growing Degree Day Calculations            (utility)

3.      Insecticide Recommendations                (utility)

5.      Herbicide Recommendations                  (utility)

                                                  '?' for help
                                                  'q' quit to Services menu

Enter Computing Menu Selection ==>
```

At this point, you can hold down the control key and press d to logoff. A closing message will appear.

```
 Session connect time: Ø days Ø hours 8 minutes 47 seconds

...and justice for all
The Iowa Cooperative Extension Service's programs and policies are consistent
with pertinent federal and state laws and regulations on non-discrimination
regarding race, color, national origin, religion, sex, age, and handicap.

Thank you for calling the ISU Extension Service Network,
please call again.

NO CARRIER


   You are now off the EXNET system.

   MAKE SURE YOUR MODEM IS HUNG-UP
```

EXNET GROWER INPUT/OUTPUT FORM FOR BLACK CUTWORM DAMAGE

Field ID #	_____	_____	_____	_____	_____	_____
Date Scouted	_____	_____	_____	_____	_____	_____
% Cut or Wilted	_____	_____	_____	_____	_____	_____
Cutworm Instar	_____	_____	_____	_____	_____	_____
Location (tier)	_____	_____	_____	_____	_____	_____
Crop Stage	_____	_____	_____	_____	_____	_____
Potentional Yield	_____	_____	_____	_____	_____	_____
Actual Plant Pop.	_____	_____	_____	_____	_____	_____
Ideal Plant Pop.	_____	_____	_____	_____	_____	_____
Soil Temp.	_____	_____	_____	_____	_____	_____
Yield if treated	_____	_____	_____	_____	_____	_____
Yield untreated	_____	_____	_____	_____	_____	_____

Field ID #	_____	_____	_____	_____	_____	_____
Date Scouted	_____	_____	_____	_____	_____	_____
% Cut or Wilted	_____	_____	_____	_____	_____	_____
Cutworm Instar	_____	_____	_____	_____	_____	_____
Location (tier)	_____	_____	_____	_____	_____	_____
Crop Stage	_____	_____	_____	_____	_____	_____
Potentional Yield	_____	_____	_____	_____	_____	_____
Actual Plant Pop.	_____	_____	_____	_____	_____	_____
Ideal Plant Pop.	_____	_____	_____	_____	_____	_____
Soil Temp.	_____	_____	_____	_____	_____	_____
Yield if treated	_____	_____	_____	_____	_____	_____
Yield untreated	_____	_____	_____	_____	_____	_____